

NOTES ON AUSTRALIAN DIPTERA. XXIII.

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(Communicated by I. M. Mackerras.)

(Thirty Text-figures.)

[Read 26th March, 1930.]

Family TACHINIDAE.

The matter presented in this paper is to be considered as supplementary to that in my preceding paper in this series in which I gave a partial revision of the Tachinidae of Australia, with generic key, the material upon which it is based having been received from Dr. I. M. Mackerras some months after the completion of that paper.

Despite the fact that this additional material greatly increases the number of genera and species now known to me, the recorded total in the two papers must fall far short of the number actually occurring in Australia and discoverable through intensive collecting.

No dipterous fauna, with the possible exception of that of New Zealand, has had as much interest for me as that of Australia, and I regret very much that I am unable to devote to it the time necessary for its thorough elucidation, and to carry my investigation of it into the field, without which latter course it is not possible to form a definite opinion of many of the inter-relationships, and also an impossibility to present a proper consideration of the systematics of the family now dealt with.

I do not present in this paper an extended generic synopsis, as it will be found necessary to do that later when a larger percentage of the genera are known, but in all cases where I record genera either new or previously described from other faunal regions and not included in my published key, I add sufficient data to permit of their being relegated to their proper place in that key, and in the case of those genera with uncarinate face and haired propleura I give a synopsis.

A striking feature of the Australian members of this family is the frequent occurrence of hairs on the centre of the propleura, these being found in genera in several of the tribes which are evidently quite unrelated to each other, if one is to judge relationships by the characters usually employed for this purpose in other faunal regions.

I have just received, in answer to a request of mine, type material of most of the species described by Mr. C. H. Curran from Australia, through the generosity of Dr. Walther Horn of the Deutsches Entomologisches Museum, Berlin-Dahlem, and offer a few notes on them herein.

Tribe PHASINI.

Genus STRONGYGASTER Macquart.

This genus in its emended form was utilized for the reception of two Australian species by Curran, as listed in my catalogue. I have before me paratype females of the species.

The genus *Strongygaster* was erected by Macquart in 1833, and in it he placed but one species, *globulus* Meigen, but in his next reference to the genus, some two years later, he included two other species, all three European. It is thus clear that the only originally included species must be accepted as the genotype. In view of this fact, it is of interest to note that *globulus* Meigen is included in the genus *Tamiclea* Macquart in the Catalogue of Palaearctic Diptera, Part 3, page 568. We are, however, not particularly concerned with the peregrinations of the European species and are rather compelled to discover if possible whether the genus name *Strongygaster* (emend. *Strongylogaster* Blanch., nec Dahlbohm, Hymen.) can be used for the Australian species referred to it.

Macquart laid particular stress upon the wing venation, using as the distinguishing character in his key "Première cellule postérieure à petiole très-court", and in his figure he shows the petiole much as I figured it for *Gymnosoma rotundata* Meigen in a recent paper in this series, and not at all like that of *H. lepidofera* Malloch. The two species described by Curran have the first posterior cell with a long petiole as in *lepidofera*. I should also hesitate to describe the abdomen of either of these species as "ventre rond", Macquart's stated meaning of his generic name.

In view of these facts I propose to reject the use of *Strongygaster* for the Australian species and retain *Hyalomyia*.

I have now a number of additional species of the genus from Australia.

Genus HYALOMYIA Robineau-Desvoidy.

The genitalia of the females of this genus present in some cases good structural characters for specific distinction, but it is not always an easy matter to relate the sexes of the species. I figure the genital segments of some of the species to show the peculiar structures referred to, which, incidentally, are quite similar in general nature to those of some North American species placed in *Alophora*.

I have attempted to work up all of the material now in my hands and to include in the key below the two species placed in *Strongylogaster* by Curran, as well as his Australian species placed in *Alophora*. I expect that there will be many more species of the genus found in Australia.

Key to the Species.

1. Apical pair of scutellar bristles well developed and situated at tip 2
 Apical pair of scutellar bristles generally short and fine, much shorter than the lateral sub-basal pair, situated well before tip 6
2. Petiole of the first posterior cell of wing at least as long as outer cross-vein, and not less than four times as long as the inner cross-vein; bend of fourth vein rounded, but the whole presenting the appearance of a hockey stick, the longitudinal portion much longer than the forwardly directed portion; species not more than 5 mm. in length; lower plate of female genitalia as in Figure 1 *normalis* Curran
 Petiole of first posterior cell of wing not more than two-thirds as long as outer cross-vein, and not twice as long as inner cross-vein; bend of fourth vein broadly and rather evenly rounded, the apical section forming an almost regular rounded arc; species not less than 6 mm. in length 3
3. Large species, about 10 mm. in length; epistome not at all projecting in profile *nigrisquama* Malloch
 Smaller species, not more than 8 mm. in length; epistome quite distinctly projecting in profile 4
4. Dorsum of abdomen in male uniformly golden or brassy dusted, without dark marks, the incurved ventral portions of the tergites densely pale-grey dusted; wings

- greyish hyaline, darkened along basal half of costa, most conspicuously so in the subcostal cell; thorax with four broad black dorsal vittae, the submedian pair extending to about midway between suture and hind margin, and twice as wide behind as before the suture, the vittae presuturally separated by conspicuous whitish-dusted intervening areas, the postsutural region golden-yellow dusted *chrysis*, n. sp.
- Dorsum of abdomen not uniformly dusted, variously marked with black; thorax not marked as above, the postsutural area broadly black centrally 5
5. Scutellum entirely black, slightly shining; area between the submedian vittae presuturally black-brown, wing with a fuscous cloud on basal half of the costa extending to apex of first vein, and a faint yellowish cloud on region surrounding the inner cross-vein *costalis* Malloch.
- Scutellum black, slightly shining, with quite distinct yellowish-grey dusting on apical margin; area between the submedian vittae presuturally not much darker than those between these and the sublateral vittae; wing with a fuscous cloud on costa as in *costalis*, but with a brown cloud along centre of disc, extending broadly on both sides of fourth vein up to outer cross-vein, and a yellowish suffusion on apical section of fourth vein *discalis*, n. sp.
6. Petiole of first posterior cell of wing not nearly as long as outer cross-vein and not twice as long as inner cross-vein 7
- Petiole of first posterior cell of wing about as long as, or longer than, outer cross-vein, and at least three times as long as inner cross-vein 8
7. Abdomen with the dorsum entirely and densely golden or brassy yellow dusted; wings with a fuscous cloud on costa from base to apex of first vein, otherwise greyish hyaline (male) *chrysis*, n. sp.
- Abdomen of male, densely golden dusted dorsally, with a faint dorsocentral vitta, and sometimes more or less blackened on the apical two segments; female with the abdomen black, second and third tergites with broad interrupted yellow-dusted basal fascia, fourth tergite wholly yellow dusted; wings of male blackish, with pale streaks in the costal cell, along the third and fifth veins, and in the apical cell; female with wings hyaline *aureiventris** Curran.
8. Males 9
- Females 13
9. All the hairs on the mesopleura slender, none of them lanceolate or scale-like, and all of them black, but some of those on the lower portion of the humerus yellow or fulvous and distinctly widened, scale-like 10
- The humeral hairs either all normal, or, if some of them are scale-like, then some of those on the mesopleura are similar in form 11
10. Wings quite conspicuously blackened on basal half costally, the dark colour extending from base to beyond inner cross-vein, and from costa to fifth vein; dust on dorsal exposure of third and fourth visible tergites of abdomen brassy, and rather checkered *basalis*, n. sp.
- Wings entirely whitish hyaline; dust on third and fourth visible tergites when seen from behind pale grey, and quite regular in distribution *hyalis*, n. sp.
11. Abdomen about as broad as long, almost circular in outline, the fourth visible tergite very little longer than third, and about three times as broad at base as long in centre; hind tarsi entirely black; wings pale brown; mesonotum with four black vittae anteriorly; pleura with normally formed dark hairs *lativentris* Malloch.
- Abdomen distinctly longer than broad; fourth visible tergite much longer than the third; wings not evenly pale brown; mesonotum not vittate anteriorly 12
12. Both the lower portion of the humeri and the upper portion of mesopleura with many yellow scale-like hairs *lepidofera* Malloch.
- Humeri normally haired, some of the hairs on anterior portion of upper section of mesopleura rather flattened and a little paler than the others *nigrihirta* Malloch.

* I have arbitrarily placed this species in the key, basing my action on Curran's description. I have also placed *chrysis* in both sections because of some possible variability in the scutellar bristling.

13. Ventral plate of genitalia straight, not curved downward at tip *sensua* Curran.
 Ventral plate of genitalia quite conspicuously curved downward at tip 14
14. Hind tarsi entirely black *nigrihirta* Malloch.
 Hind tarsi with the basal segment largely yellowish *lepidofera* Malloch.

HYALOMYIA NORMALIS (Curran).

This species, of which I have seen only one female paratype, will not find a place in my previous key, being only 4-4.5 mm. in length, and having the apical pair of scutellar bristles quite strong, and situated on the margin. The wing venation is similar to that of *lepidofera*, but the discal cell is narrower and longer. The facets are but slightly enlarged on the upper half of eye in the female. Curran describes the male as having the wings entirely hyaline, which character, coupled with the silvery-grey dust on the apical portion of the second and all of third and fourth visible tergites of abdomen, readily distinguishes it from the other species in this segregate.

Locality, Palmerston, Qld.

I figure the female genitalia of this species (Fig. 1).

HYALOMYIA NIGRISQUAMA Malloch.

I have seen only the type male of this species.

HYALOMYIA CHRYSIS, n. sp.

♂. Head black, frons deep black, orbits in front and the parafacials silvery-white dusted, face, cheeks, and occiput, densely white dusted; antennae black, palpi testaceous yellow, darker at bases; frontal hairs black, lower occipital and genal hairs white. Thorax black, with whitish-grey dusting, mesonotum with four deep black vittae, the outer one on each side entire, the submedian pair discontinued a little behind the suture and twice as broad behind it as before it, the central portion of the postsutural area densely golden-yellow dusted; scutellum black, grey dusted. Abdomen black, entire dorsal exposure densely golden or brassy-yellow dusted, the incurved lateral portions of tergites densely grey dusted, all hairs black. Legs black. Wings subfuscous, darker along costa to apex of first vein. Calyptrae fuscous, whitish at junction.

Frons linear above; epistome slightly produced; cheeks as high as length of antenna. Thorax much as in *costalis* Malloch, but the scutellum is shorter and has the apical bristles practically undifferentiated, which fact has caused me to place the species in two segregates in my key. Abdomen broadly ovate, the tergites subequal to fourth visible one, the fifth very short but distinct. Legs as in *costalis*. Wing with the apical section of fourth vein forming an almost regular fourth of a circle.

Length, 7 mm.

Type, Narrogin, W.A., 30.8.1926 (E. W. Ferguson). One specimen.

HYALOMYIA COSTALIS Malloch.

I have seen only the type specimen of this species.

HYALOMYIA DISCALIS, n. sp.

♂. Very similar to the preceding species in general appearance, but readily distinguished by the characters cited in the key. It has the scutellum more elongate and with the apical pair of bristles quite strong and outstanding, the

apical section of fourth vein not so regularly rounded, and, though the type specimen has the abdomen largely greasy, it shows traces of having the fourth visible tergite grey dusted, the others brown anteriorly, quite broadly on first and second tergites, and the posterior margins narrowly grey dusted.

Length, 8 mm.

Type, Geraldton, W.A., 5.9.1926 (E. W. Ferguson). One specimen.

It might be worth mention that the sixth wing vein in this group is not so very abruptly discontinued as in the *lepidofera* group, its apex being usually tapered off, while in the other group it is quite blunt-tipped.

HYALOMYIA AUREIVENTRIS (Curran).

I have not seen this species, but have no doubt that it belongs here.

HYALOMYIA BASALIS, n. sp.

♂. This species belongs to the same group as *lepidofera*, but it has the wings quite conspicuously blackened along costal half to the apex of first vein, which is quite unique in this section of the genus as far as I am aware. The head is the same colour as in *lepidofera*. Mesonotum seen from in front evenly white dusted to beyond the suture, the sides posteriorly not so distinctly dusted and the central portion behind suture noticeably yellowish, though by no means as strikingly yellow as in *lepidofera*, no trace of vittae present; pleural hairs black, only some of the lanceolate hairs on anterior lower portion of humeri yellow or fulvous. Abdomen very noticeably purple on the hind margins, and to less extent on the sides at curves, of the tergites, disc of tergites yellowish dusted, rather checkered, and with traces of a central dark vitta; fifth and sixth tergites, and first visible one at the curve, greyish dusted. Legs black, basal segment of all tarsi slightly yellowish, bases of femora ventrally pale-haired, elsewhere black-haired. Wings as described above. Calyptres white, slightly darkened and shining behind. Halteres brownish-yellow.

Interfrontalia obliterated on a space about as long as third antennal segment; facets not greatly enlarged on upper half of eye; epistome produced as in *lepidofera*. Some of the pleural hairs on anterior lower portion of humerus lanceolate and yellowish, those on the mesopleura all black, and normal; notopleural region rather densely black-haired; scutellum with the apical bristles fine and short, rather far from margin. Abdomen narrowly ovate, fourth visible tergite about one and a half times as long as third. Legs normal. Longitudinal portion of apical section of fourth vein not much longer than the forwardly directed section; discal cell at inner cross-vein about as wide as first posterior cell at its widest point; petiole of first posterior cell longer than outer cross-vein and more than four-fifths as long as penultimate section of fourth vein.

Length, 5.75 mm.

Type, Wahroonga, Sydney, N.S.W., 16.11.1926 (E. W. Ferguson). One specimen.

HYALOMYIA HYALIS, n. sp.

♂. Very similar to the preceding species, and possibly only a variety of it. In addition to the characters listed in the key the wings are narrower, which makes the discal cell appear longer, and the outer cross-vein is not much more than one-half of the length of the penultimate section of fourth vein, while in *basalis* it is about four-fifths as long as it. Possibly the genitalia will furnish other

characters for the separation of the forms if they are distinct, but I do not desire to destroy the unique examples now in my possession in so far as their outward appearance is concerned in dissecting them.

Length, 5 mm.

Type, Como, N.S.W., December, 1923, on flowers (H. Peterson). One specimen.

HYALOMYIA LATIVENTRIS Malloch.

I have seen only the type male of this species.

HYALOMYIA LEPIDOFERA Malloch.

Apparently a common species, as I have a good series from the type locality and a number more recently received from Wahroonga, Sydney, N.S.W.

I figure the genitalia of the female (Fig. 2).

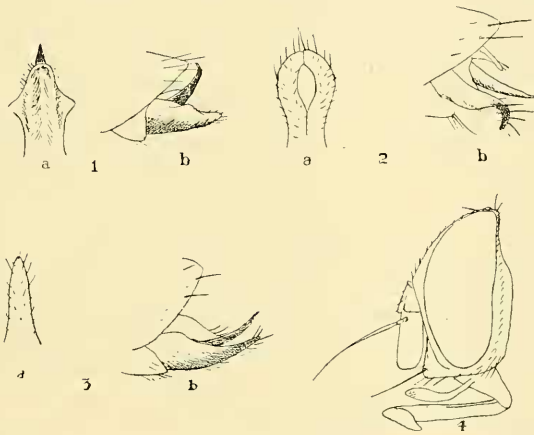


Fig. 1.—*Hyalomyia normalis*. Female genitalia; a, from below; b, from the side.

Fig. 2.—*Hyalomyia lepidofera*. Female genitalia; a, from below; b, from the side.

Fig. 3.—*Hyalomyia sensua*. Female genitalia; a, from below; b, from the side.

Fig. 4.—*Tayloria testacea*. Head of male, from the side.

HYALOMYIA NIGRIHIRTA Malloch.

Through a peculiar error the wing of this species appears as Figure 7 in my paper xix of this series (These PROCEEDINGS, 54, 1929, 111). In sending my manuscript I evidently wrongly labelled this figure as this species instead of *Gymnosoma rotundata* Meigen, and Dr. Mackerras wrote me that the figure of the wing of the latter was missing, upon which I sent a second figure, which appears properly labelled on the succeeding page. There are thus two figures of the wing of *Gymnosoma* and none of *nigrihirta* in that paper. The wing of the latter is very similar to that of *lepidofera*.

I present now characters for the separation of *nigrihirta* female from the others, but the genitalia are as in Figure 2.

HYALOMYIA SENSUA (Curran).

Only the female is known of this species, the genitalia (Fig. 3) being figured from a paratype sent to me by Dr. Walther Horn.

The legs are entirely black, the facets on the upper half of eyes are almost as large as the anterior ocellus, and the interfrontalia is obliterated on a space more than twice as long as third antennal segment.

Locality, Palmerston, Qld.

Genus TAYLORIA, n. gen.

This genus is distinguished from *Hyalomyia* Robineau-Desvoidy, at least in the male, by the following characters: Femora of all legs with two series of short spines on the apical half or more of the anteroventral and posteroventral surfaces; antennae extending almost to the mouth margin, the latter not projecting, and but slightly below vibrissae (Fig. 4); abdomen not flattened above; postscutellum not projecting beyond the level of scutellum, evenly rounded. The wing venation is similar to that of *Hyalomyia lepidofera* Malloch, the first posterior cell being long petiolate, and the petiole ending in the apex of wing. Other characters may be gleaned from the description of the genotype given below.

The genus will run down to Caption 13 in my published key to the genera, and to the first section therein, but, lacking information as to the structure of the female, I can only apply the first character in that section of the synopsis to it with absolute certainty. To prevent confusion it is necessary therefore to omit tentatively all after the first semicolon in using the key; we will then have three genera in which there are no strong dorsal bristles on the abdomen. The new one will readily separate from *Hyalomyia* on the character of the femoral bristling and the convex dorsum of abdomen, the latter in at least the males of *Hyalomyia* being more or less conspicuously flattened; from *Gymnosoma* Meigen it can be readily distinguished by the shorter second antennal segment, the very distinct and functional segmentation of the abdominal dorsum, the more extensive femoral armature, and the different wing venation.

The genus is more closely related to *Gymnosoma* than to *Hyalomyia*.

Genotype, the following species.

TAYLORIA TESTACEA, n. sp.

♂. Fulvous testaceous, slightly shining. Frons, upper occiput, third antennal segment except base, and bases of arista, fuscous; frontal orbits, face, cheeks, and occiput except upper third, silvery-white dusted; cheeks dark centrally. Mesonotum with yellow dust, most dense on a narrow presutural band, and to a lesser extent on hind margin. Abdomen sometimes with a faint trace of a dark linear dorsocentral vitta, evenly and lightly yellowish-dusted apically; all hairs black. Legs concolorous with body, tarsi fuscous, fore and mid pairs paler at bases. Calyptrae concolorous with body. Wings brownish hyaline, yellow at bases. Halteres fulvous.

Eyes bare, facets enlarged on central front portion; frons at vertex about one-sixth of the head width, orbits on entire length narrower than interfrontalia, with fine short incurved bristles along inner margins in front of ocelli; ocellar bristles short and fine, proclinate and divergent; inner verticals minute, shorter than the short postverticals; profile as in Figure 4; palpi club-shaped, bent, bare except for a few microscopic black hairs at apices; arista subnude. Thoracic hairs

very short; the following bristles present: one humeral, one pair of prescutellar dorsocentrals and acrostichals, two notopleurals, one supra-alar, two postalars, four marginal scutellars, two (1:1) sternopleurals, about four mesopleurals, one or two propleurals, one stigmatal, one pteropleural, and about eight hypopleurals, the presutural bristle minute, almost lacking; prosternum, centre of propleura, postalar declivity and the infrasquamal region bare. Abdomen elongate-ovate, slightly convex on dorsum, first visible tergite without a concavity in front, fourth slightly longer than any of the others, all without apical bristles, and with many short stiff black hairs; fifth sternite with a very large broad central excavation, reduced to a mere strip on each side which is produced into a short obtuse process at apex. Legs rather strong, hind femora stouter than the others, all femora with two series of short strong black bristles from before middle to apices; fore and mid tibiae without median bristles; hind tibia with one anterodorsal and one posterodorsal bristle near middle, both short; claws and pulvilli long. Wings rather narrow; inner cross-vein a little more than one-third from apex of discal cell and below apex of first vein; outer cross-vein straight, a little nearer inner cross-vein than to outer end of bend of fourth; petiole of first posterior cell more than half as long as outer cross-vein. Lower calypter large, transverse at apex, straight on outer side.

Length, 7.5-9 mm.

Type and one paratype, Mt. Molloy, Qld. (F. H. Taylor).

The genus is dedicated to the collector.

Tribe MICROTROPEZINI.

Genus MICROTROPEZA Macquart.

I have now before me several additional species of this genus and as the most precise manner of presenting information upon their distinguishing characters I am now publishing a new specific synopsis.

Key to the Species.

1. Second visible abdominal tergite without any outstanding bristles in centre of apical margin 2
 Second visible abdominal tergite with some strong black bristles in centre of apical margin 4
2. Abdomen testaceous yellow, with a bluish-black dorsocentral vitta which ceases about middle of fourth visible tergite and occupies less than one-third of the dorsal exposure; no strong bristles at the lateral curve of first and second visible tergites of abdomen; wings greyish hyaline, yellowish at bases; fore tarsi of female slender; mesopleura dark haired in centre *flaviventris*, n. sp.
 Abdomen black, with dense whitish-grey dusted markings; one or more strong bristles on lateral curves of first and second visible tergites of abdomen; wings more or less distinctly infuscated, bright orange coloured at bases; fore tarsi of female more or less widened 3
3. Mesopleura with some strong black hairs on centre; presutural area of thoracic dorsum inconspicuously vittate, the black vittae linear, and the pale dust greyish and not very distinct; fore tarsi of female but slightly widened .. *sinuata* Don.
 Mesopleura entirely yellow haired; presutural area of dorsum of thorax conspicuously vittate, the black vittae rather broad and the intervening spaces densely white dusted; fore tarsi of female much widened *latimana* Malloch
4. Abdomen glossy blue-black, with dense whitish-grey dusted markings as in *sinuata*; pleural hairs, except those on centre of propleura, black; wings with the veins bright orange basally *intermedia*, n. sp.
 Abdomen largely yellow, darkened only on a variable proportion of centre of dorsal exposure; pleural hairs mostly yellow; wing veins not orange coloured at bases 5

5. Abdomen with visible tergites 3 and 4 ochreous, when seen from behind with dense uniform ochreous dust *ochriventris* Malloch
 All visible abdominal tergites, when seen from behind, with dense grey or yellowish dusting and a pair of large glossy ochreous or reddish-brown spots on dorsum *flavitaris* Malloch

MICROTROPEZA SINUATA Donovan.

It would appear to be worth noting that Macquart's figure of this species does not represent the one so named by Brauer and Bergenstamm, and so accepted by me in my previous paper. The distinctly marked presutural area of thoracic dorsum and the quite evidently dilated fore tarsi indicate that he figured *latimana*. I assume that the two species were mixed in his collection and possibly in most of the others then extant.

Before me there is one additional female specimen from Geraldton, W.A. (J. Clark).

MICROTROPEZA LATIMANA Malloch.

The new material of this species available is in better condition than that from which I described the species, and the specimens all show a very much more marked division of colour between the orange-yellow bases of the wings and their fuscous apices. The five examples from Eastern Australia are distinctly larger than the four from Western Australia, but I can detect no specific distinctions between the two groups.

Localities: Lindfield, 31.10.1925 (Jones); Eccleston, Allyn R., 28.2.1921; Orange, N.S.W., 21.4.1923 (Health Dept.); Gisborne, Vict., 5.2.1922, and 16.12.1923 (G. Lyell), Swan R., W.A. (J. Clark).

MICROTROPEZA OCHRIVENTRIS Malloch.

One specimen, Gordon, 23.11.1924 (Harrison).

MICROTROPEZA FLAVITARSIS Malloch.

Five specimens, Geraldton, W.A., 5.9.1926 (E. W. Ferguson), and Kojarena, W.A., 6.9.1926 (E. W. Ferguson).

MICROTROPEZA INTERMEDIA, n. sp.

♂. Similar in general habitus and coloration to *latimana*, differing as follows: Parafacials and anterior portion of cheeks with dark hairs, third antennal segment fuscous except at base; thoracic dorsum with conspicuous white-dusted presutural marks, but the acrostichal area has a broad white central mark, not two on the lines of the bristles, and the one on each series of dorsocentral bristles is interrupted in middle; pleural hairs all black, with the exception of those on centre of propleura; mesonotum and scutellum entirely dark-haired; abdomen marked as in *sinuata* and *latimana*, but the dark portions are blue-black, and the second visible tergite, instead of having two whitish-dusted spots near anterior margin in centre, has a similar mark to the third and fourth tergites which is faint and greenish in front and grey-dusted only on the narrow posterior central portion; wings yellow at bases, but not infuscated apically; tarsi fuscous except at base of first segment.

Structurally quite similar to *latimana*, but the third antennal segment is shorter and broader, and the second visible abdominal tergite has a pair of central apical bristles. I have not compared the hypopygia of the two species.

Length, 15 mm.

Type, Eidsvold, Qld., 20.4.1924 (Bancroft). One specimen.

MICROTROPEZA FLAVIVENTRIS, n. sp.

♀. Superficially this species resembles a rather large *Chaetophthalmus*. Head orange-yellow, frontal, parafacial, and anterior genal hairs, dark, other hairs yellow, postocular cilia black; antennae and palpi orange-yellow. Thorax orange-yellow, with whitish dusting, mesonotum bluish-black except on margins, the dust so disposed as to leave four rather faint linear dark vittae; pleural hairs largely yellow, mesopleura with strong black hairs centrally; scutellum yellow, with black hairs above and pale hairs on sides below. Abdomen coloured as thorax, bases of second and third visible tergites whitish dusted, that of fourth yellowish dusted, a blue-black dorsocentral vitta occupying about one-third of the dorsal exposure extends over the basal three visible tergites, becoming narrow on apex of third, and linear or obsolete on fourth. Legs entirely yellow. Wings greyish hyaline, veins yellow basally. Calyptae and halteres orange-yellow.

Frons at vertex a little less than one-third of the head width; ocellars not developed; third antennal segment as long as second. Second visible abdominal tergite without apical central bristles, third with a complete apical series, fourth with a preapical and apical series, the apex not depressed. Fore tarsi not widened. In other respects similar to *sinuata*.

Length, 12 mm.

Type, Narromine, N.S.W., no other data. One specimen.

Tribe AMENINI.

Genus AMENIA Robineau-Desvoidy.

I append some additional records of the occurrence of species of this genus.

AMENIA LEONINA Fabricius.

Twenty-five specimens from the following localities in Queensland and New South Wales: Eidsvold, Cairns, Broken Bay, Milson Is., Woy Woy, National Park, Barrington Tops, Como, Woodford, Manly, and Loowanna.

AMENIA IMPERIALIS Robineau-Desvoidy.

Twenty-nine specimens from the following localities in Queensland and New South Wales: Magnetic Island, Eidsvold, Meringa, Broken Bay, Glen Innes, Gordon, Chester Hill, National Park, Heathcote, Como, Woy Woy, and Mosman.

AMENIA DUBITALIS Malloch.

A specimen which agrees well with the type of this species, except in having short but distinct ocellar bristles is from Eidsvold, Qld., 4.4.1924 (Bancroft).

AMENIA CHRYSAME Walker.

Amenia parva Schiner will have to fall as a synonym of this species.

Ten specimens from the following localities: Eidsvold, Qld., December, 1922, and 20.4.1924 (Bancroft); Barrington Tops, N.S.W., February, 1925, Allyn Range,

on *Leptospermum* (S.U. Zool. Exped.); Mill, Allyn Range, 18.12.1922, brush (Nicholson); Woy Woy, N.S.W., 22.9.1923 (Mackerras) and 4.10.1925 (Nicholson); Ararat, Vict. (H. W. Davey).

In addition to the characters mentioned in my key for the distinction of this species from its congeners, it may be worth mention that the second antennal segment is fuscous, while in *leonina* it is yellow. This character is specifically mentioned by Walker in his description of *chrysame*.

AMENIA NIGROMACULATA Malloch.

♀. This sex agrees in markings and general structure with the male, but the frons is about one-fourth of the head width at vertex, gradually widened to anterior margin, and each orbit has two or three quite strong forwardly-directed outer supraorbital bristles.

Locality, W. Australia; no other data.

This specimen should be considered as the allotype.

Genus STILBOMYIA Macquart.

In my catalogue of Tachinidae of Australia I listed two species of this genus, *costalis* Walker, and *opulenta* Walker, the latter with a doubt. I have now before me two species and endeavour to elucidate them below.

Key to the Species.

- A. Apex of lower calypter fuscous; fourth visible abdominal tergite without a silvery-white dusted spot on each side; central stripe of frons (interfrontalia), antennae, and palpi, fuscous; antennal foveae darkened; only the mesopleura with a white dusted spot *costalis* Walker.
- AA. Calyptrae entirely white, lower one with narrow dark rim; fourth visible tergite of abdomen with a large silvery-white dusted spot on each side; frons, antennae, palpi, and face, orange-yellow; mesopleura and sternopleura each with a white dusted spot *minor*, n. sp.

STILBOMYIA COSTALIS Walker.

This identification is based upon the example named *opulenta* Walker in the United States National Museum, and accepted as such by me in my previous paper on the genus. I am unable to say who identified the specimen. It agrees well with Engel's redescription of *costalis*, but in his paper he states that only the sternopleura has a white spot, whereas it is the mesopleura which is so marked, and he says that the base of the lower calypter is brown, whereas it is the apex that is dark.

The frons at vertex is hardly more than one-fourth of the head width, each orbit at centre is about as wide as the interfrontalia, the postocular orbits are entirely golden-yellow dusted, the thoracic dorsum is brilliant metallic blue-green and devoid of white dusting even on the humeri, and the abdomen is concolorous with it, the sutures a little darker.

Length, 8 mm.

Locality, Kuranda, Qld. (F. P. Dodd). One specimen.

STILBOMYIA MINOR, n. sp.

♀. Similar to the preceding species in general colour, being metallic blue-green, with orange-yellow head, black legs, and the wings conspicuously infuscated on costa to beyond middle, most broadly so at bases. It differs as stated in the key

and in having the upper half or more of the postocular orbits silvery-white dusted, the mesonotum slightly white dusted anteriorly and quite densely so behind the humeri and on two spots on the supra-alar margins, and the wings paler, with the costal dark mark more sharply defined. Halteres black.

Frons at vertex more than one-third of the head width, widened in front, each orbit at middle not more than one-third as wide as the interfrontalia; pre-apical central bristles of scutellum stronger than the preapical sublateral pair (weaker in *costalis*); wing not so narrow at apex as in *costalis*, the fourth vein more curved beyond the preapical angle than in that species.

Length, 7 mm.

Type, Eidsvold, Qld., 1923 (Bancroft). One specimen.

STILBOMYIA OPULENTA Walker.

This species should be omitted from the Australian list. It is apparently distinct from *costalis*, having the calyptrae entirely white. I have not seen it.

Genus NEOAMENIA, n. gen.

This genus is almost intermediate between *Amenia* and *Stilbomyia*, running down to the section in my key to the genera of Australian Tachinidae which contains these genera, but it is separable on characters not utilized therein. The frons of the male is about one-fifth of the head width, and the forwardly directed fronto-orbital bristles are very weak, the third wing vein is setulose only at base and not to the inner cross-vein, and the facial carina is broadly, longitudinally, sulcate. This last character distinguishes the genus from both of the others, the less extensively bristled basal section of the third wing vein distinguishes it from *Stilbomyia*, as does the narrower and less strongly bristled frons, and the presence of forwardly directed outer orbital bristles and the much longer third antennal segment distinguish it from *Amenia*.

Genotype, the following species.

NEOAMENIA LONGICORNIS, n. sp.

♂. Head bright orange-yellow, with yellow dust, occiput with a large black mark on each side of upper half; antennae reddish-yellow; arista and their hairs black; palpi orange; frontal and occipital hairs black, genal hairs yellow, marginal genal bristles black. Thorax shining black, with very distinct purple or violet reflections, especially around the white marks and on disc of mesonotum and scutellum, the hairs all black; mesonotum with the following conspicuous white dusted marks: two submedian vittae anterior to suture, a streak over inner half of each humerus extending to the transverse suture, and two marginal postsutural spots; a white spot on the mesopleura and another on the sternopleura. Abdomen metallic violet-blue, with a conspicuous white dusted spot on each lateral curve of visible tergites 2 to 4 inclusive, largest on 4. Legs black. Wings greyish, blackened from bases to the apices of basal cells. Upper calypter white, lower one black except at base. Halteres black.

Eyes bare; frons at vertex about one-fifth of the head width, inner verticals long and strong, outer pair short and fine; ocellars well differentiated, orbits linear above, with a series of black bristles along inner margins which are fine behind and become longer and stronger in front, one or two very fine forwardly-directed setulae on upper half, and in front of these numerous fine hairs laterad

of the bristles; carina of face gradually widened from between antennae to middle, quite conspicuously sulcate; third antennal segment more than one and a half times as long as height of cheek, the latter not half as high as eye; parafacials bare; arista quite densely haired to apex, longest hairs not as long as width of third antennal segment; a number of bristles and setulae above the vibrissae. Thorax with two or three plus four dorsocentrals, one plus two or three acrostichals, sternopleurals two plus one, and eight marginal scutellars. Abdomen with two or four bristles on centre or apex of second visible tergite, and a complete series on apices of third and fourth. Mid tibia with a submedian ventral bristle; hind tibia with two anteroventral and six or more irregular anterodorsal and posterodorsal bristles. Venation of wing as in *Amenia leonina* Fabricius, the setulae on base of third vein not extending midway to inner cross-vein.

Length, 9 mm.

Type, Western Australia; no other data (Newman). One specimen.

Tribe RUTILINI.

I had not intended to revert to this tribe again because of press of other work, but there are so many interesting species amongst the new material to hand that I have determined to add a few notes to those I have already published.

Genus FORMOSIA Guérin.

I have found two species amongst Dr. Mackerras's material which were previously unknown to me and, finding no published descriptions with which they agree, I am describing them as new. I also give some additional distribution records for some of the other species of the genus. The two new species belong to the subgenus *Pseudoformosia*.

FORMOSIA QUAD RIPUNCTATA, n. sp.

♂, ♀. Brilliant metallic blue-green; thoracic dorsum marked with white dust as in *frontosa* Malloch, two submedian presutural vittae, a streak from middle of each humerus to transverse suture, and one postsutural spot on each lateral margin; pleura with two white-dusted spots. Abdomen with twelve white-dusted spots as follows: one above and one below lateral curve on each side of second visible tergite, one on each side at lateral curve and one on each side of median line on third and fourth tergites. Legs black. Wings with bases infuscated. Calyptrae entirely fuscous.

Structurally similar to *frontosa*, but smaller. Parafacials bare. Arista pubescent.

Length, 12-14 mm.

Type, male, allotype, and one male and one female paratype, Eidsvold, Qld., December, 1922 (Mackerras).

This species may be distinguished from *frontosa*, to which it will run in my key to the species of this genus, by the following characters:

- A. Postocular orbits yellow dusted below, silvery-white dusted on upper half; second visible abdominal tergite without white-dusted submedian spots, four-spotted *quadripunctata*, n. sp.
 AA. Postocular orbits entirely and densely golden yellow dusted; second visible abdominal tergite with a pair of submedian white-dusted spots, six-spotted *frontosa* Malloch.

FORMOSIA CINGULATA, n. sp.

♂. Black, with blue or purple reflections around the lateral spots on mesonotum, and the submedian spots on tergites 3 and 4 of abdomen, and a bluish or greenish tinge showing through the white dust on second tergite, especially behind. Head bright orange-yellow dusted, upper half or more of postocular orbits silvery-white dusted, posterior extremities of frontal orbits, ocellar triangle, and a large mark on each side of upper half of occiput, blackish; antennae and palpi orange; arista fuscous; hairs on frontal orbits and anterior portion of cheeks, and the postocular ciliae, black, other cephalic hairs yellow. Mesonotum and pleura with white-dusted markings as in the preceding species. Abdomen with a band of greyish-white dust covering almost all of second visible tergite, slightly notched in middle anteriorly, and not continued to extreme lateral edge below, third and fourth tergites each with four white-dusted spots, the submedian pair small, the sublateral one on each side below lateral curve and not visible from above. Legs black. Wings fuscous at bases. Calyptres fuscous.

A more robust species than the preceding one, with the frons a little narrower, the facial carina broader, and with a quite noticeable vertical sulcus below. Second visible abdominal tergite without apical central bristles.

Length, 15 mm.

Type, Wentworth Falls, 14.12.1923 (Harrison).

This species will run down to the second segregate of Caption 4 in my key to the species of this genus already published, and may be separated from *speciosa* Erichson as follows:

- A. Abdomen predominantly black, second visible tergite nearly all white dusted above, without a black apical central spot and similarly placed bristles; legs black; mesonotum without a white-dusted mark between the presutural submedian vittae, and lacking submedian white spots near posterior margin *cingulata*, n. sp.
- AA. Abdomen predominantly white dusted, second visible tergite with a central apical transverse black spot upon which there are several strong bristles; mesonotum with a white mark between the presutural submedian vittae, and a pair of white submedian spots near hind margin *speciosa* Erichson.

FORMOSIA SPECIOSA Erichson.

Fourteen specimens from the following localities: Barrington Tops, N.S.W., February, 1925, on *Leptospermum* (S.U. Zool. Exped.); "Allowrie", Killara, Eccleston, and Fish River, N.S.W., and Bright, Vict. (H. W. Davey).

FORMOSIA SMARAGDINA Malloch.

Nine specimens from the following localities: Meringa, Qld., November, 1926 (Goldfinch), Kuranda (F. P. Dodd).

FORMOSIA ATRIBASIS Walker.

Four specimens with the same data as the preceding species.

Genus CHRYSOPASTA Brauer and Bergenstamm.

CHRYSOPASTA ELEGANS Macquart.

Rutilla elegans Macquart, *Dipt. Exot.*, Suppl. 1, 1845, 309.

I have before me a specimen labelled as this species and marked "Compared with type by Major E. E. Austen". I had previously looked over Macquart's

description, but had failed to associate it with this species. It will now be necessary to reduce *zabrina* Walker to a synonym of *elegans*. The latter was accidentally omitted from my catalogue of Australian Tachinidae.

The series of specimens before me includes the following localities: Western Australia, no other data; Swan River, W.A. (J. Clark); Wyalkatchem, W.A., 1.9.1926 (E. W. Ferguson); Mundaring, W.A. Ten specimens.

The species appears to be exclusively Western Australian, although Macquart's original locality is "De L'ile Sydney".

It would appear to be of importance to note that one of the Swan River specimens bears a large written label as follows: "*Rutilia* sp. in nest of Termites, *Eut. westaustraliensis*", and mounted with a second specimen of the same lot there is an empty puparium, this second one bearing also a red paper label with the word "Inquiline" printed on it. This is the first indication of the larval habits of the genus that I know.

The puparium is dark brown in colour, slightly shining, about 14 mm. in total length and 5 mm. wide at widest point, broadly rounded at each extremity, the surface with microscopic transverse striae or furrows, and each segment with the greater part of its extent covered with minute sharp-pointed protuberances. The dorsal portion of the cephalic cap with the anterior spiracles attached is missing in the specimen in hand, there are no dorsal respiratory horns, and the posterior spiracular organs are large, flat, glossy, and situated in a slight cavity above the central line of the posterior extremity. Their general outline is as Figure 5, the

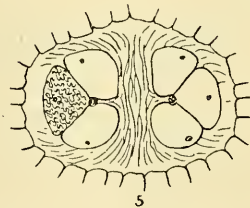


Fig. 5.—*Chrysopasta elegans*. Posterior spiracles of larva, only one lobe showing the serpentine markings.

"button" being encircled by the three greatly enlarged subtriangular spiracular lobes, each of the latter showing a small raised spot which may be the base of the fan-shaped processes generally found in most related larvae for the protection of the spiracular openings in liquid pabuli or surroundings, though no such processes are discernible, or they may represent the actual and much modified tracheal openings. The surface of each of the large subtriangular lobes is furnished with close-set serpentine markings which do not apparently penetrate the cuticle, though they roughen the surface somewhat. It would be necessary to obtain larvae to enable one to describe the structural characters more reliably. Enough is shown, however, to justify the belief that the species is really an inquiline and not a parasite.

In the puparia of certain genera of the calliphorid subfamily Rhiniinae that I have examined, the posterior spiracles are similar to those of *Chrysopasta*, except that the three lobes are not so distinctly separated, and they are not situated in a cavity or depression. The small raised spot on each lobe is present in them also.

Genus RUTILIA Robineau-Desvoidy.

I had not intended to return to this genus again, but in the material recently received there are several specimens which either belong to species previously unknown to me or throw a new light upon the distinguishing characters of some of those already dealt with in this series of papers. I present below data upon those species.

RUTILIA ARGENTIFERA Bigot.

When I dealt with this species, I had but one male before me; now I have a series of nine specimens, including both sexes. I find that, while the male has the submedian presutural pale vittae usually indistinct, the female has them normally well defined by the presence of white dust and, in addition, sometimes a pair of narrower and less distinct whitish-dusted vittae between these near the suture. The species belongs to my Group 1, both sexes having the sternopleurals 1 + 1, and the female lacking the forwardly-directed outer orbital bristles.

In my key (presented in These PROCEEDINGS, 1928, p. 331) this species will run out very readily to its proper place, except that the conspicuous presutural submedian thoracic vittae of the female may cause some slight doubt on the part of users. However, the other characters, and more especially the presence of but two white spots on each lateral margin of the mesonotum, and four round spots on second and third visible tergites of the abdomen, will readily distinguish the species.

Localities: "Allowrie", Killara, N.S.W., 29.1.1921 to 7.2.1921; National Park, Sydney, N.S.W., 21.2.1925; Penrith, 11.3.1923; Woolgoolga, N.S.W., 27.1.1923 (Health Dept.); Eidsvold, Qld., December, 1922.

RUTILIA LEUCOSTICTA Schiner.

The material now before me contains two rather distinct varieties, the typical one, in which the calyptrae and the bases of the wings are brownish-yellow, and a new one, in which the calyptrae and bases of wings are fuscous, almost black.

The general coloration of the typical form is more black on thorax and coppery on abdomen, the male having the abdomen coppery-brown, appearing semipellucid, with a broad black dorsocentral vitta.

Localities: Barrington Tops, Allyn Range, N.S.W., on *Leptospermum*, February, 1925 (S.U. Zool. Exped.); and Leura, 23.3.1924 (Harrison). Twenty specimens.

RUTILIA LEUCOSTICTA, var. FUSCISQUAMA, n. var.

This variety, of which only two females are known to me, is distinguished from the typical form by the thoracic dorsum being largely metallic dark blue-green, the white-dusted band on second visible tergite of abdomen being broadly interrupted on each lateral curve, and the calyptrae and bases of wings quite conspicuously blackened. There are also two vertical white-dusted streaks on the central portion of the upper half of occiput which are faint or lacking in the other form. Possibly a good species.

Length, 13-14 mm.

Type and one paratype, Barrington Tops, Allyn Range, on *Leptospermum*, February, 1925 (S.U. Zool. Exped.).

RUTILIA MICANS Malloch.

Two specimens agreeing with the type series.

Locality, Kosciusko, 21.2.1926 (Nicholson). This is the type locality.

RUTILIA ALBOCINCTA, n. sp.

♂, ♀. Head black, frontal orbits, face and cheeks grey dusted, postocular orbits greyish dusted, changeable according to the angle from which they are viewed, in some lights brassy; antennae and palpi fuscous; occipital hairs dull yellow. Thorax black, almost velvety, posterior portion of mesonotum slightly, disc of scutellum noticeably, shining, presutural region in both sexes whitish-grey dusted on entire width, the male with four narrow, the female with four broad, black vittae, female with, male without, an elongate whitish-grey dusted mark on each side behind suture; mesopleura and sternopleura both whitish dusted centrally. Abdomen black, more or less shining and coppery at apex, male with the second visible tergite almost entirely greyish-white dusted, third tergite with a pair of large submedian spots and the anterior half on each side below lateral curve similarly dusted, fourth tergite with two small submedian spots and a spot on each side below pale dusted; female with second tergite almost entirely greyish-white dusted above, a black central line evident, but below curve the dust is sparse and the ground colour is noticeably metallic bluish or greenish, the third tergite has a complete white-dusted band on anterior half above and below, and the fourth tergite has the anterior margin faintly white dusted below curve only. Legs black, tibiae brownish. Bases of wings, calyptreae, and halteres fuscous. Thoracic and abdominal hairs black.

Frons of male at vertex not more than twice as wide as third antennal segment, that of female more than one-fifth of the head width, both lacking forwardly-directed outer orbital bristles, and with the parafacials bare below level of apex of second antennal segment; third antennal segment in female about as long as distance from its apex to the mouth margin, much shorter in the male; arista subnude; palpi normal. Thorax as in the *formosa* group. Second visible tergite of abdomen in male with a pair of apical central bristles, in female with discal and apical bristles, third tergite in both sexes with apicals and discals. Male with a regular fringe of bristles on the anterodorsal surface amongst which one bristle is slightly longer than the others, female with two or more outstanding anterodorsal bristles on same tibia.

Length, 13-15 mm.

Type, female, allotype, and two female paratypes, Barrington Tops, Allyn Range, on *Leptospermum*, February, 1925 (S.U. Zool. Exped.).

There is considerable sexual dimorphism in the specimens before me and, though it is quite possible I may have two species confused, I believe that, despite the difference in length of third antennal segment, and other characters, I have male and female of the same species in my type series. If it should be discovered that there are in fact two species in my concept, the female shall be considered as entitled to the name given above.

This species belongs in Group I, as defined in my last paper on this genus, having forwardly-directed orbital bristles in neither sex, and the anterior sternopleural bristle present in the female only. It is readily distinguished from any of the other already known species by the general black and white coloration of the thorax and abdomen, and particularly by the black, whitish-grey dusted face,

and the broad white-dusted fascia on the second visible abdominal tergite. It has much the same appearance as *Formosia cingulata*, n. sp., but the presutural dorsal area of the thorax appears to be white dusted, with four black vittae, while in *cingulata* the same area appears as deep black, with four narrow silvery-white dusted vittae.

Subgenus *SENOSTOMA* Macquart.

RUTILIA (SENOSTOMA) HIRTICEPS Malloch.

One male, Sydney, N.S.W., 26.11.1922 (Health Dept.).

RUTILIA (SENOSTOMA) FLAVIPES Brauer and Bergenstamm.

Two females: Northbridge, December, 1927 (M. Fuller), and Bowral, February, 1923.

RUTILIA (SENOSTOMA) NIGRICEPS Malloch.

Five males: E. Dorrigo, N.S.W., 30.1.1923, and Barrington Tops, January, 1925, and February, 1925, the last one on *Leptospermum* (S.U. Zool. Exped.).

RUTILIA (SENOSTOMA) RUFICORNIS Macquart.

I consider it highly probable that I have two closely related species, both of which would run out to this one in my key recently published, but I am unable to devote the necessary time to their elucidation at present and must perforce lay the material aside pending an opportunity to go into the matter.

One series of specimens from Barrington Tops has a much more coppery, or even purplish, suffusion on thorax and abdomen in both sexes than is found in the specimens from other sections, and possibly they belong to an undescribed species.

There are at least two names involved in the matter, but whether they have been correctly synonymized remains to be decided.

Tribe *DEXINI*.

This tribe, as at present accepted, is rather heterogeneous, being a group distinguished mainly by the slender form of the species, the presence of distinct hairs on the arista, and a few rather intangible and variable characters of different nature. I hope to be able to deal with the grouping of the entire family at some future time, but have nothing concrete to offer at this time. The first genus dealt with below is quite different from *Prosenia* and its allies, and was probably derived from entirely different progenitors.

Genus *THELAIRIA* Robineau-Desvoidy.

I did not include this genus in my key to the Australian Tachinidae, but I have before me now one species which I cannot distinguish from the genotype, and present below a generic diagnosis.

Longest hairs on arista not as long as width of third antennal segment, frons of male narrower than that of female, at vertex about one-fifth of the head width, widened anteriorly, orbits bristled, lacking forwardly-directed supraorbitals in the male, possessing them in the female, interfrontalia complete in both sexes, ocellars long, proclinate and divergent, inner verticals long in both sexes, outer pair undeveloped in male, microscopic in female, parafacials bare; face almost flat; head at vibrissae shorter than at base at antennae; proboscis and palpi normal.

Prosternum and centre of propleura bare, no hairs above or below lower calypter, the latter bare on disc above, subtransverse at apex, and not very noticeably widened behind. First wing vein setulose on at least the basal half above, third with a few setulae at base below and on a variable extent of its upper surface; first posterior cell open, ending before wing tip; outer cross-vein much nearer to bend of fourth vein than to inner cross-vein. Abdomen with strong bristles in centre of apices of all tergites, and at least one pair of discal bristles on each tergite from second to fourth inclusive.

THELAIRIA LEUCOZONA (Fallen).

This species is evidently listed from Australia as *T. australis* Walker. I have carefully compared Australian and North American specimens and can find no material differences in them. The male has the abdomen rufous, with a broad dorsal stripe and the apex black, while the female has it entirely glossy black; both sexes have the bases of the tergites broadly silvery-white dusted. The legs are black. Hypopygium of male as Figure 6.

Length, 9-12 mm.

Localities: Sydney, N.S.W., October, November, December, and April (Health Dept.); Barrington Tops, N.S.W., January, 1928 (Benham).

This genus will run down to Caption 32 in my key to the Australian genera, but it will not fit exactly in either segregate because of the hairing of the arista, the longest hairs of which are shorter than the width of the third antennal segment. It fits best in the first segregate, but is distinguished from *Mesembriomintho* Townsend (= *Sumpigaster* Macquart) and *Rhinomyiobia* Brauer and Bergenstamm by the setulose first vein of the wing, calling for the following change in the key:

- 32a. First wing vein setulose above on at least its basal half *Thelairia* R.-D.
 First wing vein bare above 32b.
 N.B.—Change 32a to 32b in key.

Genus SUMPIGASTER Macquart.

Amongst the material now before me there are two males and two females of this genus, one of them identified as *fasciatus* Macquart by the late Dr. E. W. Ferguson. A comparison with the genotype of *Mesembriomintho compressa* Townsend proves that the latter is synonymous. We must therefore dispense with the latter name.

SUMPIGASTER FASCIATUS Macquart.

To rectify my generic key it will be necessary to supplant *Mesembriomintho* by using *Sumpigaster*.

Four specimens: North Bay, April 10, on window pane; Sydney, N.S.W., 19.10.1924; Gordon, 9.11.1924 (Harrison); Port Macquarie, 19.4.1924 (Nicholson).

I may present a fuller description of this species than is now available at some future time if there should be any closely similar species in collections sent me.

Genus ZOSTEROMYIA Brauer and Bergenstamm.

This genus falls in Caption 32 of my generic key because of the distinctly haired arista, the longest hairs on which, though not as long as the width of the third antennal segment, are about twice as long as its basal diameter. Possibly the best method of rectifying this section of the key to take care of this genus and

several others would be to amend the first sentence of Caption 32 as follows: "Arista distinctly haired, the longest hairs always at least twice as long as its basal diameter;" and to delete all after that point. This will permit the alteration given under the genus *Thelairia* herein, and the present genus, having the arista with its longest hairs distinctly shorter than the width of the third antennal segment, may be distinguished from *Sumpigaster* Macquart, and *Rhinomyiobia* Brauer and Bergenstamm, by that character, and from the latter it can be further distinguished by the presence of discal bristles on at least the second to fourth visible tergites of abdomen.

ZOSTEROMYIA CINGULATA (Macquart).

A very conspicuous deep velvety-black species with silvery-white dust on face, lower occiput, and postocular orbits, a complete annulus of same nature on thorax just in front of suture and a fascia on hind margin of mesonotum, and one on each visible abdominal tergite from second to fourth inclusive similarly coloured. Cheeks, antennae, palpi, and legs black. Wings greyish hyaline, darker costally. Calypterae white. Halteres yellow.

Eyes bare; frons of male about one-sixth, of female about one-fourth, of the head width, the female with, the male without, forwardly-directed outer orbital bristles. Thorax with two plus three dorsocentrals and three plus three acrostichals; apical scutellars lacking. Abdomen conical, not compressed. Mid tibia in neither sex with ventral bristle; hind tibia with a number of anterodorsal and posterodorsal bristles, two on each surface much longer than the others; fore tarsi slender in both sexes. Outer cross-vein about three-fifths from inner cross-vein to bend of fourth; first posterior cell ending a little before apex of wing, bend of fourth vein subangular, lower calypter not much widened behind, the apex rounded.

Length, 5-8 mm.

Localities, Kuranda, N. Qld. (F. P. Dodd); Meringa, Qld., Nov., 1926 (Goldfinch); Eccleston, Allyn River, 26.2.1921; Gundamaian, National Park, N.S.W., 1.1.1926 (Nicholson); Sydney, N.S.W., 25.1.1924; Port Macquarie, 19.4.1924 (Nicholson).

Larval habits unknown to me.

Genus PROSENA St. Fargeau and Serveille.

I included this genus in my generic key, the principal distinguishing characters cited being the long proboscis, the carinate face, and plumose arista. I figure the characteristic head of the genus (Fig. 7), and this may be compared with the head of a closely related genus included herein (Fig. 16). The palpi are comparatively short and somewhat club-shaped. Other characters may be gleaned from the generic key already referred to, and the matter appearing subsequently in this paper. The hypopygial characters are very similar to those of some of the related genera, indicating a possibility of a common, and recent origin, but my information on the matter of relationships is too scanty to draw any definite conclusions.

Curran has published a key for the identification of the species, a reference to which is given in my recent catalogue, but it is based exclusively upon colour characters, and I find it impossible to determine the Australian species definitely by its use. I have made tentative identifications in some cases, but I may be

wrong in my conclusions, which can be proven only by an examination of the hypopygia of the males of the species involved. It is for this reason that I now present a synoptic key and details of the hypopygial structures of the species before me, hoping that the same may prove useful to students of the family. I make use of the males only in the first key.

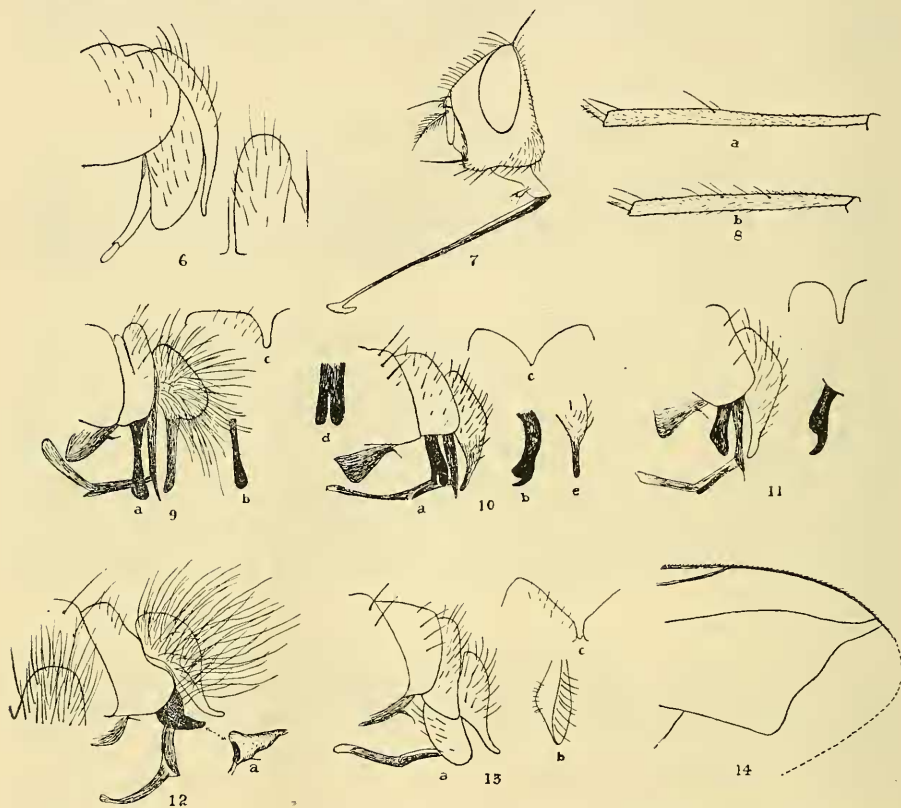


Fig. 6.—*Thelairia leucozona*. a. Male hypopygium from side; b. fifth sternite of same, one lobe.

Fig. 7.—*Prosenia sibirita*. Head of male from side.

Fig. 8.—*Prosenia* species. Hind tibiae; a, *argentata*; b, *sibirita*.

Fig. 9.—*Prosenia tenuis*. Male hypopygium; a, from the side; b, inferior forceps from behind; c, fifth sternite, one side.

Fig. 10.—*Prosenia* species. Male hypopygia; a, *sibirita*, Australian form from side; b, inferior forceps of same from in front; c, fifth sternite of same; d, inferior forceps of Asiatic form and *parva*; e, superior forceps of *parva* from the side.

Fig. 11.—*Prosenia sibirita*, var. *confusa*. Hypopygium of male; a, from the side; b, inferior forceps from in front; c, fifth sternite, one side.

Fig. 12.—*Prosenia argentata*. Male hypopygium from the side; a, inferior forceps from below.

Fig. 13.—*Prosenia indecisa*. Male hypopygium; a, from the side; b, inferior forceps from in front; c, fifth sternite, one side.

Fig. 14.—*Prosenia indecisa*. Apex of wing.

Key to the Species.

Males.

1. Interfrontalia practically obliterated for a shorter or longer distance above the middle of frons by the broad, densely white-dusted frontal orbits; mesonotum when viewed against the light and from above left humerus densely silvery-white dusted on anterior three-fourths, brownish-yellow dusted on posterior fourth, when seen from behind against the light the pale-dusted portion becomes dark grey or fuscous, broadly paler on central (acrostichal) area, and narrowly so on lines of dorsocentrals; hind tibia quite conspicuously attenuated on basal half (Fig. 8a), and with one quite well developed bristle on the posterodorsal surface well beyond middle; genital segments quite copiously furnished with soft pale hairs ventrally *argentata* Curran.
Interfrontalia generally clearly visible on its entire extent, the frontal orbits never silvery-white dusted, and the dusting on the mesonotum always greyish or yellowish; other characters not as above *in toto* 2
2. Hind tibiae not noticeably attenuated on basal half (Fig. 8b); mid tibia with a quite well developed submedian ventral bristle; hind femur with only one bristle on posterodorsal surface, which is at about its own length from apex 3
Hind tibiae quite noticeably attenuated on almost, or more than, the basal half (Fig. 8a); mid tibia without a distinct submedian ventral bristle; hind femur without any posterodorsal bristles or with two or more which are not close to apex 5
3. Bases of the superior hypopygial forceps quite abruptly differentiated from the apical slender portion and with longer and more abundant brown hairs than usual, appearing tufted from side view (Fig. 9) *tenuis*, n. sp.
Bases of the superior hypopygial forceps tapered into the apical portion, and not at all tufted 4
4. Inferior forceps of hypopygium furcate (Fig. 10) *sibirita* Fabricius.
Inferior forceps not furcate (Fig. 11) *sibirita* Fabricius, var. ?
5. Legs black, apices of femora narrowly reddish; fifth visible abdominal tergite with a pair of well developed apical bristles, in some cases very strong, in others much weaker; scutellum without differentiated discal bristles, the hairs much longer and denser apically than basally; cheeks almost bare behind the vibrissal angle *nigripes* Curran.
Legs testaceous yellow, only the tarsi fuscous; fifth visible tergite of abdomen without well developed bristles, merely haired; discal hairs on scutellum of almost uniform length; cheeks quite distinctly pale haired behind vibrissae *indecisa*, n. sp.

Females.

1. Legs black, only the extreme apices of femora reddish *nigripes* Curran.
Legs largely yellow or fulvous 2
2. One of the two bristles at apex of auxiliary vein on costa at least as long as the inner cross-vein *parva*, n. sp.
Neither of the two bristles at apex of auxiliary vein on the costa nearly as long as the inner cross-vein 3
3. Frontal orbits greyish-yellow dusted, dark brown at upper extremities; fourth vein slightly but distinctly bisinuate beyond the preapical bend (Fig. 14) *indecisa*, n. sp.
Frontal orbits grey or yellowish dusted, not distinctly darker at upper extremities; fourth vein not bisinuate beyond the preapical bend 4
4. Outer pair of mesonotal dark vittae much broader than the submedian pair in front of the suture; abdomen brownish testaceous, apices of tergites almost black, their bases broadly and densely grey dusted, the whole having the appearance of being alternately grey and black-brown fasciate; antennae and aristae orange-yellow; third visible abdominal tergite with four strong apical bristles including those on the sides *bella* Curran.
Outer pair of mesonotal dark vittae not much broader than the submedian pair; abdomen not conspicuously grey and dark-brown fasciate; third visible abdominal tergite with at least six strong apical bristles 5
5. Thorax and abdomen with whitish-grey dusting; fore femur with the posteroventral series of bristles very short basally, becoming longer near apex sp.

Thorax and abdomen with yellowish-grey or brownish-grey dusting; fore femur with the posteroventral series of bristles normal, longest at or near middle
 *sibirita et al.*

PROSENA ARGENTATA Curran.

This is the most striking species of the genus known to me, the silvery dust on the head and thoracic dorsum being very noticeable. Curran describes the mesonotum as having a broad black fascia behind the suture, but makes no mention of the similar one before it, which is equally conspicuous. In several other respects the original description is not in accordance with my material, but I can see no reason to doubt the identification. I figure the male hypopygium (Fig. 12). I have seen no specimens which might with certainty be considered as the females of this species, the only specimens which I hesitated to identify as this species or *sibirita* being radically different from the one described as *argentata* by Curran. I therefore do not record any of my specimens as the female of this species.

Localities: Eidsvold and Yeppoon, Queensland, and Glenreagh, N.S.W.

PROSENA TENUIS, n. sp.

♂. Head testaceous yellow, interfrontalia brownish-yellow behind, paler in front, antennae and palpi orange-yellow; arista brownish-yellow; frontal orbits, face, cheeks, and occiput white dusted. Thorax as in *sibirita*, fuscous, with pale-grey dust, the four mesonotal vittae inconspicuous, interrupted at suture, and not continued to hind margin; scutellum blackened on sides basally; mesopleura with the hairs nearly all yellow, some on upper margin and a few behind the hind marginal bristles black. Abdomen testaceous yellow, translucent, with slightly checkered white dusting, a black central apical mark and one on each lateral curve on first two visible tergites, the third and fourth tergites more broadly black on dorsal exposure. Legs yellow, apices of mid and hind femora and tibiae darkened, tarsi black. Wings greyish-hyaline. Calyptrae yellowish-white. Halteres yellow.

Frons at vertex about one-third as wide as either eye, orbits as wide as interfrontalia at any part, each with about seven inner marginal bristles; ocellars short but rather strong, outer verticals undeveloped, inner pair long. Thorax as in *sibirita*. First visible tergite of abdomen without apical central bristles, second with a pair; hypopygium as in Fig. 9. Legs as in *sibirita*, neither the apices of the femora nor the bases of the tibiae noticeably attenuated; mid tibia with the submedian ventral bristle rather short. Fourth wing vein beyond the preapical curve slightly and almost regularly curved.

Length, 12 mm.

Type, Gundamaian, National Park, N.S.W., 1.1.1926 (Nicholson). One specimen.

PROSENA SIBIRITA (Fabricius).

This species is one which has caused me some difficulty in arriving at a decision as to its status. Originally European, it has been recorded from a large number of countries and, if certain authorities are correct, it has been described under quite a number of different names. I have made a careful study of the hypopygia of many of the available specimens from Europe, Asia, and Australia, and am still undecided as to the specific limits in the material examined. The typical forms have the inferior hypopygial forceps broad, and deeply cleft at

apex (Fig. 10), which form is found also in *parva*, n. sp., but in the Australian specimens the same organ is found with the apex much narrower, and very much less deeply cleft (Fig. 10). Possibly the form figured as variety *confusa*, n. var., herein (Fig. 11) is merely a variety of *sibirita*, but more material is necessary to arrive at a definite conclusion as to this.

I am uncertain of the identity of the female in my Australian material.

Localities: Marwood and Eidsvold, Qld., and Manly, N.S.W.

PROSENA SIBIRITA, var. CONFUSA, n. var.

This variety, if such it is, may be distinguished from typical *sibirita* only by the structure of the inferior forceps (Fig. 11).

Type, Eidsvold, Qld., December, 1922. One specimen.

PROSENA PARVA, n. sp.

♂, ♀. Very similar in general coloration to *sibirita*, but the male has the thoracic dorsum lead-grey dusted in front between the vittae and brownish-grey dusted behind, the abdomen has the dorsal dusting yellowish-grey except on a small region in centre of fore part of each tergite, where it is lead-grey. This difference in coloration is not noticeable in the female, except to a small extent on the abdomen.

Structurally the species differs in being much smaller, and in having one of the bristles at apex of the auxiliary vein on costa about as long as, or longer than, the inner cross-vein. The male hypopygium is very similar to that of *sibirita*, but the inferior forceps are narrower at base, and the superior pair are straighter on the apical attenuated portion (Fig. 10).

Length, 5-7 mm.

Type, female, Sydney, 14.1.1923; allotype, same locality, 21.1.1923; paratypes, all females, Glenreagh, N.S.W., 1.2.1923, Manly, N.S.W., 16 and 19.11.1923, and Sydney, N.S.W., 1.1.1923.

PROSENA NIGRIPES Curran.

Dr. Aldrich (*Ent. Mitt.*, 17, No. 2, 1928, 130) has discussed this species in a paper dealing with *sibirita* and its allies. He assumes that *malayana* Townsend is a good species, but states that he is unaware whether *nigripes* Curran and *doddi* Curran are synonymous with it.

The male standing as *malayana* in the United States National Museum collection is, in my opinion, merely a dark-legged specimen of *sibirita*, but it is not the type, so that I am unable to state definitely the status of the species. However, *nigripes* is a good species, quite distinct from *sibirita*, the hypopygium of the male being very similar to that of *indecisa* figured herein, the only difference apparent to me being that the inferior forceps are somewhat broader at the apices. The peculiar broadened apices of the femora in the female of this species, coupled with the almost entirely black legs, readily distinguish that sex. The male has the legs much as in *indecisa*, but they are black.

Localities: "Allowrie", Killara, N.S.W.; Sydney, N.S.W.; Austinmer, N.S.W.; Marwood, near Mackay, Qld.; Cairns, Qld. Eleven specimens.

PROSENA BELLA Curran.

I have seen only the female of this species and cannot, of course, tell if the presence of but four strong apical bristles on the third visible abdominal tergite

is an invariable character. In the only specimen before me, the anterodorsal bristles on the fore tibia are more irregular and less numerous than in *sibirita*, and there is a pair of strong apical central bristles on the first visible tergite, which is quite unusual in the females of the genus. The colour markings would appear to be a good criterion for the identification of the species.

Locality: Marwood, near Mackay, Qld., January, 1924 (W. C. Harvey).

PROSENA INDECISA, n. sp.

♂, ♀. This species is very like *argentata* in general appearance, but lacks the silvery dust of the thoracic dorsum, and the presutural and postsutural black patches, the vittae being of the usual narrow form and well separated. The abdomen has the black dorsocentral vitta always distinct and usually more or less distinctly widened at apex of each tergite. Legs fulvous yellow, tarsi black. Wings slightly yellowish, the veins sometimes more or less clouded with yellow apically.

Structurally differing from *argentata* in the distinct interfrontalia, and the form of the male hypopygium (Fig. 13), as well as in the bisinuate apical section of fourth vein beyond the preapical angle (Fig. 14).

Length, 11-14 mm.

Type, allotype, one male and one female paratype, Barrington Tops, N.S.W., January, 1925 (S.U. Zool. Exped.). Paratypes, Woodford, 27.1.1923, Austinmer, 19.12.1921, Gisborne, V., 26.3.1922, Woy Woy, September and October, 1923-25, "Allowrie", Killara, 6.2.1921, 9.10.1924 and 4.11.1924, Blue Mts. 13.4.1922. Fourteen specimens in all.

I would have accepted this as *macropus* Thomson were it not for the presence of a pair of strong bristles at the apex of the first visible abdominal tergite.

PROSENA SP.

I have one female from Marwood which does not appear to belong to any of the species before me, but do not care to deal further with a single example.

PROSENA DORSALIS Macquart; PROSENA VITTATA Macquart.

I have nothing to add to my catalogue record, except that *vittata* closely resembles my description of *indecisa*.

Genus PROSENA, n. gen.

This genus has much the appearance of *Prosema*, but the first posterior cell is closed at a short distance from the margin of the wing, the preapical angle of fourth vein is sharp, and usually furnished with a short appendiculate vein, and the sternopleural bristles are three (2 + 1) in number instead of two (1 + 1).

Genotype, the following species.

PROSENA NICHOLSONI, n. sp.

♂, ♀. Black, shining, with grey dusting on head, thorax and abdomen. Interfrontalia brown, face and anterior portion of cheeks brownish or yellowish testaceous, frontal orbits, parafacials, face, posterior portion of cheeks, and the parafacials, densely grey dusted; antennae varying from brown to fuscous, the base of third segment reddish-yellow; palpi brown or yellowish. Thorax with

traces of four blackish vittae, and irregularly marked with brown, especially at bases of the larger bristles and near posterior margin of dorsum. Abdomen with minute setigerous black dots on dorsum, and some larger dark brown spots on posterior margins of all tergites except fourth, the latter at bases of the strong bristles. Legs black. Wings greyish hyaline, a portion of the subcostal cell, both cross-veins, and at least the preapical angle of fourth vein, clouded with fuscous. Calyptrae white. Knobs of halteres fuscous.

♂. Eyes bare; frons at vertex about half as wide as one eye, interfrontalia complete, narrower above than either orbit, the latter with quite long strong inner marginal bristles on entire length, which are incurved, ocellars well developed; parafacials bare from below level of second antennal segment, wider than third antennal segment and more than half as wide as height of cheek, the latter not one-third of the eye height; facial carina as in *Prosenia*, visible from the side; arista plumose; third antennal segment about three times as long as second; vibrissae a little above mouth margin; proboscis and palpi as in *Prosenia*. Thorax with two pairs of presutural acrostichals, three pairs of postsutural dorsocentrals, and two pairs of intraalars, the other characters, except the sternopleurals, as in *Prosenia*. Abdomen subcylindrical, the tergites all with apical central bristles which become progressively farther from apex to fourth where they are almost on centre of disc; hypopygium small, concealed. Legs shorter than in *Prosenia*, similarly bristled, the mid tibia with a quite long submedian ventral bristle, the hind tibia usually with two long and one short bristles on the anterodorsal and posterodorsal surfaces, and two on the anteroventral. Apical wing venation as in Figure 15.

♀. Differs from the male in having the frons about as wide as one eye, the orbits wider and with two proclinate outer bristles, the parafacials wider, almost as wide as height of cheek, the abdomen broadly ovate, and the femora widened at the extreme apices much as in *Prosenia nigripes* Curran, and mesonotum broadly dark on disc.

Length, 5-6.5 mm.

Type and two male paratypes, Gundamaian, National Park, N.S.W., 1.1.1926 (Nicholson); allotype, Eradu, W.A., 8.9.1926 (E. W. Ferguson); male paratypes, Woodford, N.S.W., 28.11.1925 (Nicholson), Sydney, N.S.W., 3.9.1922 (Health Dept.), female, Wyalkatchem, W.A., 1.9.1926 (E. W. Ferguson). Seven specimens.

To facilitate the recognition of this genus and others in which the face is prominently carinate and the arista plumose, that are not included in my key to the Australian genera, I append a key below. All of those genera, with the exception of one in which the centre of the propleura is haired, will run down to Caption 22 in the key. At that caption, two of the genera split off from the others on the length of the proboscis, *Prosenia* and *Prosenina* having it more than twice as long as the head, while the others have it not more than one and a half times as long as the head. All of the other genera have the palpi rather short, not more than twice as long as the basal diameter of the apical portion of the proboscis, and would cause one to hesitate as to which section under Caption 23 they ought to fall in. They fit in neither very well, and it will therefore be necessary to erect a new section on the basis of the plumose arista and prominently carinate face, no genus in either section of Caption 23 having both of those characters in common. All of the genera are closely related and the following key will be of service in their recognition.

Key to the Genera.

1. Apical portion of proboscis distinctly longer than head, usually not less than twice as long, heavily chitinized, swollen at base and from there attenuated to apex or near it (Fig. 7) 2
- Apical portion of proboscis not, or very slightly, longer than head, chitinized, and usually of almost uniform thickness on entire length, the labellae always enlarged (Fig. 16) 3
2. First posterior cell of wing open *Prosenina* St. Fargeau and Servelle
First posterior cell of wing closed and short petiolate *Prosenina*, n. gen.
3. Centre of propleura haired; lower calypter bare on upper surface; parafacials finely haired on almost their entire length *Rhyncodexia* Bigot
Centre of propleura bare 4
4. Lower calypter with fine erect hairs on a portion of upper surface along the outer margin 5
- Lower calypter bare except for the marginal fringe *Austrodexia*, n. gen.
5. Parafacials bare below level of lower frontal bristle *Lasiocalypter*, n. gen.
Parafacials haired on almost their entire extent *Lasiocalyptrina*, n. gen.

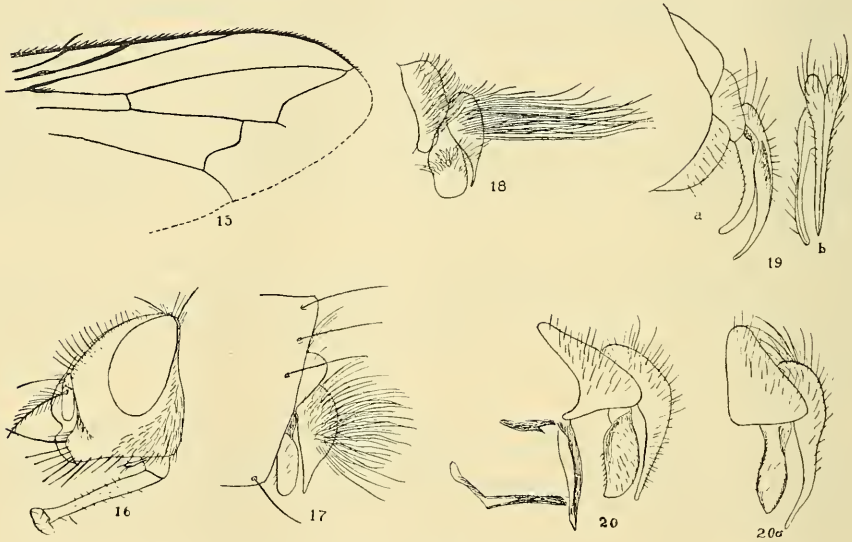


Fig. 15.—*Prosenina nicholsoni*. Apex of wing.

Fig. 16.—*Lasiocalypter nigrihirta*. Head of male from the side.

Fig. 17.—*Lasiocalypter nigrihirta*. Hypopygium of male from the side.

Fig. 18.—*Lasiocalypter hirticauda*. Hypopygium of male from the side.

Fig. 19.—*Lasiocalypter flavohirta*. Hypopygium of male; a, from the side; b, from behind; one side incomplete.

Fig. 20.—*Lasiocalypter atripes*. Hypopygium of male from the side.

Fig. 20a.—*Lasiocalyptrina modesta*. Hypopygium of male from the side.

Genus RHYNCODEXIA Bigot.

I have some doubts as to the identification of this genus and wrote to Mr. J. E. Collin some time ago asking him to examine the genotype for certain characters, but have had no reply from him. Provided it is possible for me to obtain the desired information later, I will publish the results and if correction is necessary will make same in a future paper.

RHYNCODEXIA LONGIPES (Macquart).

This is the largest species of this tribe known to me from Australia, and has the hind legs much elongated. Macquart's description will enable anyone to identify it.

Localities: Barrington Tops, January, 1925 (S.U. Zool. Exped.), and Gunda-maian, National Park, N.S.W., 1.1.1926 (Nicholson). Thirty specimens.

Genus LASIOCALYPTER, n. gen.

This genus is distinguished from any in Dexiini known to me, in which the face is strongly carinate, by the presence of rather long erect hairs along the outer margin of the lower calypter. Such hairs occur in the tachinid genus *Nemoraea* Robineau-Desvoidy, and in certain Calliphoridae, but in these they occupy a larger proportion of the surface, or, when more restricted, they are near base and not along the outer margin. In *Anacamptomyia africana* Bischof, an African species, the lower calypter is similar to that of the present genus, but the face is not carinate, and the arista is merely pubescent, not plumose. In other respects the new genus is quite similar to the preceding genus. The wing lacks an outstanding bristle at the apex of the auxiliary vein on the costa.

Genotype, *Lasiocalypter flavohirta*, n. sp.

I present below a key for the separation of the species now known to me.

Key to the Species.

- 1. Males 2
- Females 4
- 2. Fourth visible abdominal tergite with quite long and moderately strong apical bristles; claws and pulvilli of fore tarsi at least as long as fifth segment of that pair of tarsi; all of the hairs on the mesopleura, except those on lower anterior angle, and all, or a large portion, of those on margin of disc of the lower calypter, black *nigrihirta*, n. sp.
- Fourth visible abdominal tergite centrally without strong apical bristles; claws and pulvilli of fore tarsi not as long as the apical segment of same; most of the hairs on the mesopleura and all of those on margin of disc of lower calypter yellow 3
- 3. Bases of the superior hypopygial forceps with numerous long brown hairs which project backwards and are slightly curled (Fig. 18); legs entirely black *hirticauda*, n. sp.
- Bases of superior forceps without long backwardly directed hairs 3a
- 3a. Apices of femora, fore and mid tibiae, and bases of hind tibiae fulvous yellow; hypopygium as Fig. 19 *flavohirta*, n. sp.
- Legs entirely black; hypopygium as Fig. 20 *atripes*, n. sp.
- 4. All of the discal hairs on the mesopleura yellow or pale 5
- None of the discal hairs on the mesopleura pale 6
- 5. Legs entirely black; all femora widened at apices where they are as thick as at any other point; hind tibiae not at all attenuated basally *hirticauda*, n. sp.
- Apices of femora and nearly all of tibiae yellowish-brown, remainder fuscous; femora not at all widened at extreme apices, apical third or more of mid and hind pairs distinctly attenuated, and thinner than the basal portions *flavohirta*, n. sp.
- 6. Legs black; first visible abdominal tergite with a pair of strong apical central bristles; second with one or more pairs of discal bristles *nigrihirta*, n. sp.
- Tibiae brownish-yellow; no apical central bristles on first visible abdominal tergite, and no discals on second tergite *flavohirta*, n. sp.

LASIOCALYPTER NIGRIHIRTA, n. sp.

♂, ♀. Occiput and frontal orbits fuscous, densely white dusted, interfrontalia dark brown in the male, fuscous in the female, lower portion of parafacials and

anterior portion of cheeks reddish, upper portions of parafacials whitish-grey dusted; face testaceous yellow, dull; antennae in female almost entirely black, only the apex of second segment rufous, paler in the male, second segment rufous, the third segment reddish at base, fuscous beyond; arista and their hairs fuscous; palpi brownish to fuscous, paler at apices; proboscis with the apical section glossy black; occipital hairs pale, those on margins and the frontal hairs dark. Thorax black, with quite dense whitish-grey dusting, the mesonotum with four black vittae, the submedian pair discontinued between suture and posterior margin, the sublateral pair interrupted at suture and continued almost to posterior margin, the surface slightly speckled with dark colour at bases of the hairs and bristles, the female with indications of brown intervening vittae behind suture, especially centrally in front of scutellum. Abdomen coloured as thorax, the dusting dense and changeably checkered, the male with a dark dorsocentral vitta which is widened at apex of each tergite, the female without such a distinct vitta. Pleural hairs mostly yellow, but those on disc of the mesopleura all black; abdominal hairs black above, largely yellow below to beyond middle. Legs black in female, apices of femora sometimes yellow in male, and generally the tibiae yellowish in the latter also. Calyptrae yellowish-white, margins yellow, the hairs partly yellow, partly black, in both sexes. Wings greyish hyaline, veins slightly browned in the female.

♂. Frons at vertex about as wide as third antennal segment, the interfrontalia obliterated just in front of ocelli, orbits with long bristly hairs along their inner margins; ocellar bristles long and fine, no hairs laterad of the marginal bristles; parafacials bare, about as wide as length of third antennal segment; profile as Figure 16; palpi short, not dilated at apices. Thorax with three plus three dorsocentrals, one pair of long presutural and prescutellar acrostichals, sternopleurals one plus one, prosternal plate and centre of propleura bare. Abdomen tapered to apex, cylindrical, first visible tergite depressed in centre to apex, bulging up on each side above, second tergite with a transverse depression at base above; all tergites with strong apical central bristles, second to fourth tergites with discal bristles; hypopygium as Figure 17. Legs slender, moderately elongated, hind tibiae attenuated on basal third or less; fore tibia with two or three anterodorsal and posterior bristles; mid tibia with one ventral, one anterodorsal, one posterodorsal, and two posterior bristles; hind tibia with one anteroventral and about three anterodorsal and posterodorsal bristles; claws and pulvilli of fore tarsi as long as fifth tarsal segment. Wings with some setulae at base of third vein above and below; bend of fourth vein angular; distance from apex of third vein to apex of wing about half as great as distance from it to apex of second vein; inner cross-vein distinctly proximad of level of apex of first vein and close to middle of discal cell.

♀. Frons at vertex nearly one-third of the head width; each orbit with two proclinate outer bristles, and some fine hairs laterad of the inner marginal bristles. Abdomen ovate, bristled as in the male. Legs not so long as in male, similarly bristled.

Length, 11-12 mm.

Type, male, allotype, one male and one female paratype, Barrington Tops, N.S.W., February, 1925 (S.U. Zool. Exped.).

LASIICALYPTER HIRTICAUDA, n. sp.

♂, ♀. Differs from the preceding species in having the palpi yellow, the pleural hairs practically all yellow, the abdomen translucent fulvous yellow in the male,

less translucent in female, with a black dorsocentral vitta and brown apices to tergites in both sexes, the dorsum with greyish or yellow dusting which is rather checkered and most distinct on the anterior lateral portions of the dorsal exposure of the tergites, legs black, calyptres yellowish, more intensely yellow on margin of lower one, halteres yellow.

Structurally the species differ as stated in the key, the tufted apex of abdomen of the male (Fig. 18) and the almost uniformly thick hind femora of the female being very distinctive. The mesonotum has two pairs of intra-alars, the abdomen in the female lacks discal bristles on second and third tergites and apical bristles on first, the male has apical central bristles on first and second visible tergites, a pair of bristles near apex of third tergite centrally and no apical bristles on fourth on the dorsal section, though there are some on sides, the second and sometimes the third with weak discals. Mid and hind femora of male attenuated on apical third or more, the hind pair with some anteroventral bristles on basal half, mid and hind tibiae in same sex attenuated on more than their basal third, mid pair without a distinct submedian ventral bristle, hind pair with one anteroventral, one posterodorsal, and usually two anterodorsal bristles, all very short; fore tibia in both sexes with some short bristles on median portion of anterodorsal surface, and two posterior bristles; female with a distinct submedian ventral bristle.

Length, 8-10 mm.

Type, male, allotype, and one male and two female paratypes, Barrington Tops, N.S.W., January and February, 1925 (S.U. Zool. Exped.).

This species rather closely resembles some species of *Prosema* in superficial appearance, but the shorter proboscis and haired lower calypter readily separate it from any in that genus.

LASIOCALYPTER FLAVOHIRTA, n. sp.

♂, ♀. Similar in general appearance to *nigrihirta*, but with the dorsum paler owing to the dusting being whitish and the soft hairs largely pale, the pleura almost entirely pale-haired, and the apices of the femora broadly yellow, more conspicuously so ventrally.

Structurally the male is very similar to that of *hirticauda*, but the absence of long backwardly-directed hairs on the bases of the superior forceps, and differently-shaped forceps, will readily distinguish the two species. The female differs very markedly from that of *hirticauda* in the shape of the femora, which are attenuated apically, though not so much so as in the male. There is some slight difference in the colour of the hairs on the mesopleura in some of the specimens before me, and possibly they do not all belong to the same species (Figure 19).

Length, 10-12 mm.

Type, male, allotype, and two male and one female paratypes, Barrington Tops, N.S.W., Jan.-Feb., 1925 (S.U. Zool. Exped.); two females, same locality, 25.1.1922 (Nicholson).

LASIOCALYPTER ATRIPES, n. sp.

♂. Very similar to the preceding species, but with the four black vittae on the mesonotum rather broader and more distinct, and the legs entirely black.

Structurally similar, but readily distinguished by the structure of the hypopygium (Fig. 20), the broad, leaf-like inferior forceps apparently connecting

the species more nearly with the other species than with *flavohirta*. The legs are the same in structure as in the preceding species.

Length, 11 mm.

Type, Blue Mts., N.S.W., 26.1.1922 (Health Dept.). One specimen.

In figuring the hypopygia of the species of this genus, I have purposely left out the penis except in one figure, but the omission is unimportant as this organ is apparently similar in all the species, the only appreciable difference being found in the superior and inferior forceps.

Genus LASIOCALYPTRINA, n. gen.

Similar to the preceding genus, distinguished therefrom by the haired parafacials. The hind tibiae in the male are much attenuated on their basal halves as in some species of several of the foregoing genera, and the male has the first visible tergite humped up on each side dorsally and the second depressed across its anterior third.

Genotype, the following species.

LASIOCALYPTRINA MODESTA, n. sp.

♂, ♀. Similar to *Lasiocalypter flavohirta* in general coloration, even to the broadly pale apices of femora and the pale-haired pleura and lower calypter.

Structurally it differs from that species in having the parafacials with fine and rather long forwardly-directed pale hairs on the greater portion of their extent, and the hypopygium quite different, very similar to that of *L. atripes*, but with the inferior forceps more noticeably narrowed at bases (Fig. 20a), and the superior pair more slender and more evidently curved on apical halves.

It is noteworthy that the female which I associate with the male of this species has the hind tibiae almost as conspicuously attenuated on basal halves as does the male, while the female associated with the male of *flavohirta* has them hardly at all attenuated. In both species the female has strong apical bristles on the fourth visible tergite, while the male lacks them.

Length, 11-12 mm.

Type, male, and one male paratype, Gisborne, V., 19.3.1922, and 26.3.1922, respectively; allotype, Barrington Tops, January, 1925 (S.U. Zool. Exped.).

Provided it may be discovered subsequently that there are two species confused in my material, the male will be considered as entitled to bear the specific name.

It is also possible that the character used for separation of the genus from *Lasiocalypter* may not be found invariably dependable and the genus may fall as a synonym thereof.

Genus AUSTRODEXIA, n. gen.

Very similar to *Rhyncodexia*, but there are no hairs on the centre of propleura, or on the parafacials below the lower frontal bristle or at least from a short distance below it. The lack of erect hairs on disc along the outer lateral margin is a ready distinguishing mark from *Lasiocalypter*.

Genotype, *Austrodexia setigera*, n. sp.

Key to the Species.

Males.

1. Lower calypter with a large brown stain or cloud on disc, best seen when the calypter is viewed from behind 2

- Lower calypter satiny-white or uniformly yellowish-white, without a dark discal cloud when seen from any angle 3
2. First visible abdominal tergite with the anterior depression not continued beyond middle; lower calypter with most of the marginal hairs on outer side black, the long hairs carried farther towards apex than usual; intra-alars three, the anterior one close to suture; posteroventral bristles on fore femur uniseriate; tarsal claws and pulvilli fully as long as entire antenna; one of the pair of bristles on costa at apex of auxiliary vein as long as inner cross-vein *pictipennis* Macquart.
- Depression on anterior portion of first visible tergite continued to almost the extreme apex centrally; lower calypter with all of the marginal hairs yellowish-white; intra-alars two; posteroventral bristles on fore femur in more than one series; tarsal claws and pulvilli shorter than antenna; longer one of the two bristles at apex of auxiliary vein much shorter than inner cross-vein, hardly distinguishable *rubricarinata* Macquart.
3. Hind femur gradually and slightly tapered from beyond middle to apex, and with one outstanding posterodorsal bristle at not, or but little, more than its own length from apex; hind tibia not strikingly attenuated basally, or, if so, on less than its basal fourth, and with several anterodorsal and posterodorsal bristles, one beyond middle distinctly longer than diameter of tibia 4
- Hind femur much attenuated on apical third or more, widened at extreme apex, and with from one to five bristles on basal portion of apical half; if with only one bristle, it is at one-third from apex; hind tibia distinctly attenuated on about its basal half, usually with one anterodorsal and posterodorsal bristle beyond middle which are not longer than its diameter 5
4. Mid tibia with the submedian ventral bristle much longer than the tibial diameter; three or more bristles on the basal half of anteroventral surface of hind femur; intra-alars three *setigera*, n. sp.
- Mid tibia with the submedian ventral bristle very small, often lacking; when present, not nearly as long as tibial diameter; usually no strong bristles on the basal half of anteroventral surface of hind femur; intra-alars two *communis*, n. sp.
5. Fifth abdominal sternite with many long downwardly-directed bristles on basal half of each process, which are longer than the process and curve backward at apices giving the abdomen a tufted appearance (Fig. 23) *setiventris*, n. sp.
- Fifth abdominal sternite without long bristles as described above 6
6. Hind tibia with a submedian posterodorsal bristle; inner cross-vein distinctly clouded with fuscous *unipuncta*, n. sp.
- Hind tibia without a submedian posterodorsal bristle; inner cross-vein not at all clouded 7
7. Fore coxae entirely yellow-haired *pallidihirta*, n. sp.
- Fore coxae with some strong black bristles amongst the yellow hairs .. *mixta*, n. sp.

Females.

1. Lower calypter with a large brown mark or cloud on middle of disc 2
- Lower calypter white or yellowish, with a dark discal mark 3
2. Intra-alars three *pictipennis* Macquart.
- Intra-alars two *rubricarinata* Macquart.
3. Inner cross-vein of wings distinctly clouded with fuscous *unipuncta*, n. sp.
- Inner cross-vein of wings without a dark cloud 4
4. Scutellum quite noticeably paler than the mesonotum, yellowish testaceous *pallidihirta*, n. sp.
- Scutellum not noticeably paler than the mesonotum *setiventris*, n. sp.

AUSTRODEXIA PICTIPENNIS (Macquart).

♂, ♀. A black species, with grey dusting on head, thorax, and abdomen. Interfrontalia and face centrally brownish testaceous in male, interfrontalia in female fuscous; basal two antennal segments reddish, third fuscous; palpi fuscous. Thorax with four or five dark dorsal vittae. Abdomen with the whitish-grey dusting distinctly checkered, the male with darker spots at bases of the strong

bristles. Legs black. Wings greyish hyaline, with both cross-veins and usually the fourth vein on its apical section narrowly clouded with fuscous. Calyptrae white, lower one with a large dark brown discal mark. Halteres brown.

Frons of male at vertex hardly wider than third antennal segment, ocellars and inner marginal bristles on orbits long; frons of female fully one-third of the head width, orbits at level of lower reclinate outer bristle about as wide as interfrontalia, each orbit with three outer bristles on upper half, the upper one curving outward and slightly backward, the other two proclinate; palpi short; arista rather densely haired, the longest hairs about as long as width of third antennal segment. Thorax with three plus three dorsocentrals, one or two plus two acrostichals, one plus one sternopleurals, and six marginal scutellars. Abdomen subcylindrical and tapered in male, with apical central bristles on all tergites and discals on second to fourth, first visible tergite with the central anterior depression not very sharply defined and ceasing well before apex of dorsum, fifth sternite with several quite strong bristles on each process, hypopygium as in Figure 21; abdomen of female ovate, lacking apical central bristles on first visible tergite and discal bristles on the others. Legs normal in female, except that the femora are slightly spatulate at extreme apices, the hind tibiae of male very distinctly attenuated at bases; female with, male without, a submedian ventral bristle on mid tibia. Outer cross-vein of wing almost S-shaped; first posterior cell narrowly open; one of the bristles at apex of auxiliary vein on costa quite long.

Length, 7-11 mm.

Localities: Hawkesbury Sandstone bush, 9.9.1923, two males (Nicholson); National Park, Gundamaian, 12.4.1925 (Mackerras); Kuring-gai, 26.9.1925; and Mundaring, W.A., 26.8.1926 (E. W. Ferguson).

It must be noted that identification of this and other Macquart species will require confirmation by examination of type specimens, if such exist.

AUSTRODEXIA RUBRICARINATA (Macquart).

♂, ♀. This species is quite radically different from the preceding one, having the hind tibiae in the male without an attenuation at bases, the first visible abdominal tergite with a quite deep depression to apex in the male, no discal bristles usually present on third visible tergite in that sex, and the mesosternum with dense erect yellow hairs in front of the posterior marginal bristles which are not present in the male of *pictipennis*. The outer cross-vein is not noticeably clouded, though the inner one is, and the former is not so abruptly bent. The frons of the female is more narrowed above than in *pictipennis*, being less than one-third of the head width at vertex and, though this sex has a rather evident bristle at apex of the auxiliary vein on costa, the male has none.

Length, 10-12 mm.

Localities: National Park, 16.10.1927, and 1.1.1926 (Mackerras), Bayview, Sydney, N.S.W., 19.12.1925 (Health Dept.); "Allowrie", Killara, N.S.W., 7.11.1921; Woy Woy, 8.3.1924 (Nicholson); Mosman, N.S.W., 24.9.1922; Eidsvold, Qld. Thirteen specimens.

AUSTRODEXIA SETIGERA, n. sp.

♂, ♀. Very similar to the preceding species in coloration, but the face is more yellowish, and the lower calypter is satiny-white. Structurally it differs in having the mid tibia in both sexes with a strong submedian ventral bristle, the hind

tibia of male slightly but quite evidently attenuated at base, and the hind femur with three or four strong bristles on the basal half of the anteroventral surface. The inner cross-vein of the wing is slightly clouded, the outer one is without an evident cloud, and there is one rather long bristle on costa at apex of auxiliary vein; outer cross-vein less curved than in the two preceding species.

Length, 11-13 mm.

Type, male, allotype, and three male paratypes, Woy Woy, sand bush, 2.9.1925 (Nicholson); paratypes, same locality as type, 8.8.1925 (Nicholson), and Manly, Sydney, N.S.W., 17.9.1923 (Health Dept.).

The last mentioned male paratype has a pair of strong apical central bristles on the first visible abdominal tergite, which are lacking in the other males, but it agrees in every character other than that with the type, including the hypopygium (Fig. 25).

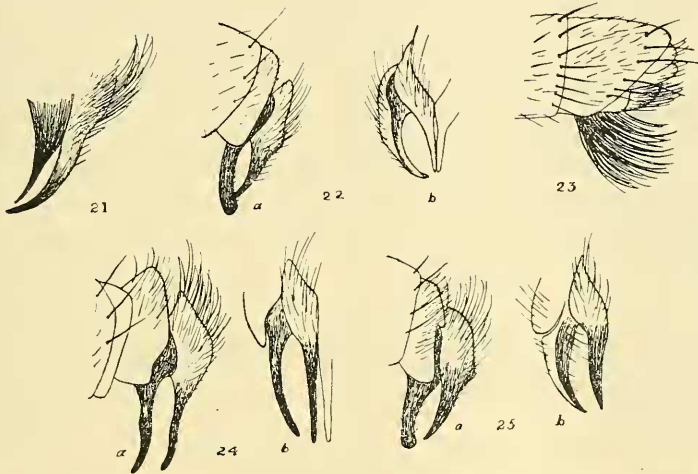


Fig. 21.—*Austrodexia pictipennis*. Apex of hypopygium of male from the side.

Fig. 22.—*Austrodexia communis*. Hypopygium of male; *a*, from the side; *b*, from behind; one side.

Fig. 23.—*Austrodexia setiventris*. Apex of abdomen of male from the side.

Fig. 24.—*Austrodexia pallidihirta*. Hypopygium of male; *a*, from the side; *b*, from behind; one side.

Fig. 25.—*Austrodexia setigera*. Hypopygium of male; *a*, from side; *b*, from behind.

AUSTRODEXIA COMMUNIS, n. sp.

♂. Very similar to the preceding species, differing in the characters mentioned in the key to species, and in the genitalia of the male (Fig. 22), though the latter has the same general characteristics to a greater extent than in other species of the genus.

Length, 11-13 mm.

Type, Canberra, F.C.T., 27.1.1929 (M. Fuller); paratypes, National Park, 16.10.1927, Waterfall, 9.11.1927, National Park, Gundamaian, 12.4.1925 (Mackerras), Bunya Mt., Qld., 9.1.1926.

AUSTRODEXIA UNIPUNCTA, n. sp.

♂. A more slender species than the preceding one, with the hind legs more elongated, the hind tibiae attenuated on about their basal halves, the hind femora without well developed anteroventral bristles on the basal halves, and the mesopleura black, instead of white, haired.

Length, 11-13 mm.

Type, male, and one paratype, Barrington Tops, N.S.W., January, 1925 (S.U. Zool. Exped.); paratypes, National Park, 16.10.1927, and Gundamaian, National Park, 12.4.1925 (Nicholson).

AUSTRODEXIA PALLIDIHIRTA, n. sp.

♂, ♀. The largest and most robust species of the genus before me, readily distinguished from its congeners by the reddish or testaceous scutellum, and the conspicuous pale hairs on thorax and abdomen. The abdomen has the grey dusting on dorsum quite dense, and because of the distinct dark dorsocentral vitta and transverse dark marks on apices of the tergites, they appear almost as whitish spots on each side of each tergite. The face is paler than in the other species and so also are the central portions of the tibiae. The mid and hind tibiae are conspicuously attenuated on basal halves in the male, but they are not noticeably so in the female, though they are distinctly curved. Here, as in the other species, there is the sexual dimorphism of the abdominal armature, the male having discal bristles and the female lacking them. Hypopygium of male as Figure 24.

Length, 12-15 mm.

Type, male, allotype, and ten paratypes, Barrington Tops, N.S.W., January and February, 1925 (S.U. Zool. Exped.).

AUSTRODEXIA MIXTA, n. sp.

♂. Very similar to the preceding species, but smaller, and differing as noted in the key to species.

Length, 12 mm.

Type, male, Barrington Tops, N.S.W., January, 1925 (S.U. Zool. Exped.).

AUSTRODEXIA SETIVENTRIS, n. sp.

♂. Like a slender specimen of *pallidihirta*, but with the scutellum not paler than the mesonotum, the legs even longer and more slender, and the body not so robust. Structurally the species is distinguished at once from all its congeners by the presence of many long bristly hairs on the basal portion of the fifth abdominal sternite, which curve backwards and give the abdomen a slightly tufted appearance. I have not dissected the hypopygium, as the external characters appear to distinguish the species for present purposes (Fig. 23).

Length, 13 mm.

Type, male, allotype, and three male paratypes, Glenreagh, N.S.W., 29.1.1923, 2.2.1923, and 25.1.1923 (Health Dept.).

When the family is ultimately worked up intensively, the hypopygia of all the species ought to be figured and more extensive descriptions published, but in the meantime the above details will suffice, with the type specimens, for comparison.

Genus ANATROPOMYIA, n. gen.

Propleura haired in centre; prosternum bare; face without a distinct keel; arista short-haired; palpi well developed; proboscis normal; third vein of wing

setulose at base, other veins bare; first posterior cell open, ending near apex of wing; lower calypter widened behind.

Genotype, the following species.

ANATROPOMYIA FLAVICORNIS, n. sp.

♂. Frons fuscous, orbits grey-dusted, face testaceous, parafacials and anterior portion of cheeks brown, the former yellowish-grey dusted, posterior portions of cheeks fuscous, with grey dust; antennae orange-yellow, basal two segments dark; palpi orange-yellow; proboscis black. Thorax black, with rather dense pale-grey dust, dorsum with four black vittae, the submedian pair abbreviated behind. Abdomen black, more distinctly shining than thorax, with grey dust which is somewhat checkered, and a rather indistinct dark dorsocentral vitta. Legs black. Wings greyish hyaline. Calyptrae yellowish-white, with a dark spot in centre of upper one. Halteres brown.

Eyes bare; frons at vertex about one-third as wide as one eye, interfrontalia entire, orbits linear above, with quite long inner marginal bristles, inner verticals developed, ocellars proclinate, profile as Figure 26. Thorax with three plus three dorsocentrals and acrostichals, three intra-alars, the posterior sublateral lacking, sternopleurals two plus one and no hairs below lower calypter. Abdomen sub-cylindrical, tapered to apex, with apical bristles on tergites 2 to 4 and discals on 3 and 4. Legs normal in length, tibial bristles quite long, mid pair with a submedian ventral bristle. Wings normal, preapical bend of fourth vein angular, without a spur, outer cross-vein much closer to bend than to inner cross-vein.

Length, 11 mm.

Type, Ilford, N.S.W., 30.12.1923. One specimen.

This species is like a tachinine, being of stouter build than is usual in the Dexiini, but because of the haired arista, low situation of the antennal insertions, and one or two other characters, I place it in this tribe. Possibly it should be placed in *Trichostylum* Macquart, but the species is distinct from the type of that genus.

Genus HOBARTIA, n. gen.

Readily distinguished from its allies by the peculiar shaped head with the low placed antennal insertions, subplumose arista, and haired centre of propleura. Other characters may be gleaned from the description of the genotype given below.

Genotype, the following species.

HOBARTIA PECULIARIS, n. sp.

♂, ♀. Black, densely yellowish-grey dusted, basal two antennal segments, palpi, trochanters, and in the male the apical lateral portions of first visible and the entire sides of second visible tergite, testaceous yellow or reddish-yellow; tibiae more or less yellowish, sometimes entirely so. Wings greyish hyaline. Thorax with four incomplete dark dorsal vittae. Abdomen almost uniformly densely yellowish-grey dusted in male, shining black in female and with dense grey dust at bases of the tergites which tapers off apically. Calyptrae yellowish-white. Halteres brown.

Eyes subnude; profile as in Figure 27, frons depressed at vertex, inner verticals strong in both sexes, ocellars short and fine, orbits with an inner marginal series of incurved bristles and one recurved upper bristle; the male with rather strong

hairs laterad of the bristles, the female with two or more proclinate outer orbitals; arista with the longest hairs not as long as width of third antennal segment; palpi well developed. Thorax with three plus three dorsocentrals and acrostichals, the posterior sublateral bristle lacking, sternopleurals one plus one, marginal scutellars six. Abdomen tapered apically in male, the tergites subequal, first with shallow depression to apex, second and third with discal and apical

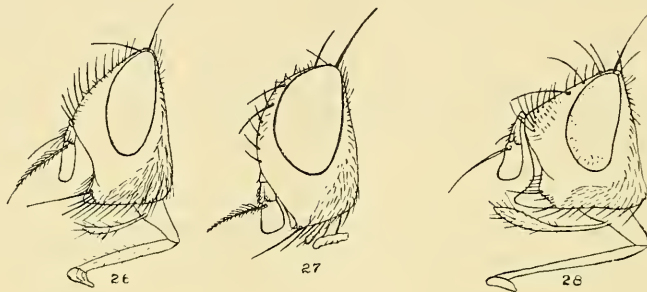


Fig. 26.—*Anatotomyia flavicornis*. Head of male from the side.

Fig. 27.—*Hobartia peculiaris*. Head of female from the side.

Fig. 28.—*Ezechopalpus rufofemorata*. Head of female from the side.

bristles, fourth with long strong bristles on sides and apex, female with the abdomen ovate, less strongly bristled. Legs normal, mid tibia in both sexes with ventral bristle, fore tarsi of female slender. First posterior cell open, ending slightly before wing tip, first vein bare, third setulose at base, outer cross-vein about one third from bend of fourth. Lower calypter broadened and rounded apically, lying close to side of scutellum.

Length, 6-8 mm.

Type, male, and allotype, Hobart, Tasmania, male labelled "Bred from Wood".

This is the only perfect species of the family I have seen from Tasmania.

Tribe LESKIINI.

This group is a rather difficult one to define, there being no outstanding characters for its recognition, although the general shape of the head is quite uniform in all the genera, there being a similarity in the long lower border which always exceeds the length of head at bases of antennae. The proboscis is always rather slender, in some cases with the apical portion very slender and exceeding the length of the head. In other respects the head differs both in the absence or presence of hairs on the arista and the parafacials, and though the palpi are always well developed there is a slight variation in both the length and the dilation of these in different genera. I have seen no Australian genus in which there are hairs on either the prosternum or the centre of the propleura, and the dorsocentrals are invariably three-paired behind the suture.

In my new key to the genera which I hope to publish shortly I have not attempted to bring the genera of the tribes together in the same section, believing that a key at this stage of our knowledge of this family here should primarily be intended to enable students to identify the species, and not to show relationships which unfortunately are too frequently based upon opinion and not upon

demonstrable facts either of biology or anatomy. Subsequent work, or some other worker, may discover reliable means for the grouping of the members of this and other tribes, but at present there is none such available which may be used with ease by even the advanced student of the family, and certainly none which is not susceptible to misconstruction, and therefore apt to mislead.

I have examined the genotypes of many of the genera which belong to this tribe, and base my deductions as to generic concepts upon these examinations. Coquillett has sunk *Pyrrhosia* Rondani, and *Myiobia* Robineau-Desvoidy and several other genera as synonyms of *Leskia*, but his generic concepts were quite broad and it is not advisable to accept his conclusions without careful comparisons of the genotypes, unless the genera are isogenotypic.

Genus DEMOTICUS Macquart.

Curran has referred one Australian species to this genus, but it does not belong here, so the genus should be deleted from the list, at least until confirmed.

Genus RHINOMYIOBIA Brauer and Bergenstamm.

This genus was founded for the reception of one species, *australis*, which, I consider, is represented amongst my present material. In his recent paper on the Diptera of the Fiji Islands, Bezzi described two species which he placed herein, but it is possible there are two genera represented in the recorded species, as the generic limits are not very clearly established. As accepted by me, on the basis of the characters of the genotype, the distinguishing features of the genus are: Parafacials bare below the lower frontal bristle, the latter not below apex of second antennal segment; proboscis with the apical section about as long as head and not very slender; palpi of average length; arista with distinct hairs, always distinctly longer than its basal diameter; abdomen without discal bristles. Bezzi describes one of his species as possessed of proclinate fronto-orbital bristles in both sexes, and the other without such bristles in the male. The one with the reclinate bristles in the male has the arista with its longest hairs as long as width of third antennal segment, while the other one has the arista much shorter. I have two species before me which exhibit the same difference in the aristal hairing, but in the one with long hairs there are no proclinate orbital bristles in the male.

Below I present a diagnosis of the two species in my hands.

- A. Arista with its longest hairs about twice as long as its basal diameter; frontal bristles biseriate in front near bases of antennae; second visible abdominal tergite with a pair of long strong bristles; tibiae reddish-yellow; mesonotum when seen from behind with four narrow dark vittae which are not fused behind the suture *australis* Brauer and Bergenstamm.
- AA. Arista with its longest hairs about four or five times as long as its basal diameter, and about equal in length to width of third antennal segment; second visible abdominal tergite without well developed apical central bristles; tibiae largely infuscated; mesonotum when seen from behind with a pair of narrow dark grey submedian vittae in front of suture and on each side of these a broader spot-like black mark, the postsutural region with a broad black anterior marginal transverse mark which consists of the four fused vittae *transversalis*, n. sp.

RHINOMYIOBIA AUSTRALIS Brauer and Bergenstamm.

The male has the abdomen with a rather broad black dorsocentral vitta which is slightly widened at apex of second visible tergite and forms an apical fascia on third, while it almost entirely covers the apex of abdomen; the female has the

dorsocentral black vitta less defined and the apices of the tergites either entirely black or with three black marks. Both sexes have the frontal bristles at least biseriate anteriorly, most noticeably so in the male. There is a slight difference in the structure of the fore tarsi in the two females before me, one having the apical three segments more noticeably widened than the other. However, I consider they are the same species.

Localities: Sydney, N.S.W., 23.12.1923 (Health Dept.); National Park, Gunda-
maian, 12.4.1925 (Mackerras), and "Allowrie", Killara, N.S.W., 16.1.1921.

RHINOMYIOBIA TRANSVERSALIS, n. sp.

♀. Head testaceous, with grey dust, interfrontalia black-brown, antennae fulvous yellow, third segment black except at base; palpi orange-yellow. Thorax black, with brownish-grey dusting, scutellum not noticeably yellow as in *australis*, the mesonotum marked as stated in key. Abdomen reddish-yellow, with a partial blackish dorsocentral vitta, the bases of the tergites narrowly white dusted. Legs fulvous yellow, tibiae largely infuscated, tarsi black. Wings brownish hyaline, darkest along costa.

Frons at vertex hardly more than one-third of the head width, ocellar bristles minute, frontal bristles descending almost to apex of second antennal segment, in one series. Thorax with three plus three dorsocentrals, two pairs of presutural acrostichals, and two plus one sternopleurals. Legs normal, fore tarsi not widened, mid tibia with a ventral bristle. Wing venation as in *australis*, first posterior cell ending a little before wing tip.

Length, 8 mm.

Type, Cairns district, Qld. (Dodd), no other data.

I have a male which may belong to this species, but it lacks the arista and has the mesonotum marked as in *australis*, so there is some doubt as to its identity and I therefore leave it aside meantime. It is from Marwood, Queensland.

Genus EXECHOPALPUS Macquart.

This genus was unknown to me when I arranged my key to the genera, but I now have several species which are referable here. All except one of these have the palpi much longer than usual in the group, and rather distinctly club-shaped. Like all of the tribe, the prosternum and propleura are bare, and the head is longer at lower margin than at bases of antennae. In this genus the arista are bare, the proboscis has the apical portion rather slender and varying from slightly shorter than, to a little longer than, the length of head at lower margin. The parafacials are either bare on their lower halves or almost so, the frontal orbits in male lack proclinate outer bristles, and they have at least one such in the female, the two upper outer bristles on each orbit in that sex being directed almost straight outward over the eyes, a character which distinguishes the genus from *Demoticus*, in which the upper bristle is directed, or curved, backward. The ocellars are distinct, quite strong in the female, and the profile of head is usually as in Figure 28. For other characters see the subjoined key and descriptions of species.

I am not certain that I have the genotype, *rufipalpis* Macquart, in hand and am therefore leaving it out of consideration in my treatment of the genus. An examination of the type specimen will be required to determine its identity and relationship to the species dealt with herein.

Key to the Species.

1. Males 2
 Females 3
2. Abdomen with well developed discal bristles on second and third visible tergites; first posterior cell of wing open; femora rufous yellow, fore pair fuscous on posterior side; abdomen rather densely whitish-grey dusted, first visible tergite with its dorsal exposure, second and third with their apices, rather broadly shining brownish-black *ruffemur*, n. sp.
 Abdomen without well developed discal bristles on second and third visible tergites; first posterior cell of wing closed and with a short petiole; femora black, rufous yellow on about the apical halves on ventral surface; abdomen quite densely whitish-grey dusted, the dust checkered when seen from different angles and not arranged as in preceding species *dubitalis*, n. sp.
3. Abdomen with well developed discal bristles on second and third visible tergites; legs tawny yellow, posterior side of fore femur and apical two or three segments of each tarsus fuscous *ruffemur*, n. sp.
 Abdomen lacking well developed discal bristles on at least the second visible tergite; legs not coloured as above 4
4. Legs black, slightly reddish at apices of femora, most noticeable ventrally
 *atripes*, n. sp.
 Legs tawny yellow, fore femur on posterior side and apices of tibiae slightly darkened, tarsi entirely black *fulvipes*, n. sp.

EXECHOPALPUS RUFFEMUR, n. sp.

♂, ♀. Fuscous, with rather dense pale-grey dusting. Interfrontalia reddish to fuscous, orbits whitish dusted; basal two segments of antennae rufous, third fuscous; palpi rufous yellow, usually darker at apices. Thorax with four dark dorsal vittae, in female sometimes the mesonotum and disc of scutellum brown marked. Abdomen rather checkered on dorsum in female, the male, and to a lesser extent the female also, with dark apices to tergites 2 and 3. Legs tawny yellow, fore femora largely dark in male on posterior side, less so in female, tarsi infuscated at apices. Wings slightly fumose, more noticeably so basally. Calyptrae greyish-white. Halteres brown.

Eyes with sparse microscopic hairs; frons of male about one-fourth of the head width at vertex, orbits narrowed above, with incurved bristles along the inner margins and numerous lateral hairs, the female with the frons nearly one-third of the head width at vertex, orbits more strongly bristled along inner margins and with three long outer bristles on upper half, the uppermost two curved outwardly, the anterior one proclinate; arista bare, second segment short; profile as Figure 28. Thorax with three plus three dorsocentrals, two plus two acrostichals, the anterior postsutural pair nearer suture than usual, three pairs of intra-alars, three bristles on presutural lateral area, and three sternopleurals, prosternum and regions above and below lower calypter bare; scutellum with four long marginal and two shorter preapical bristles, the apicals undeveloped. Abdomen ovate, broader in the female, with apical central bristles of first and discal and apical bristles on other tergites. Fore tarsi of female not dilated, mid tibia in both sexes with anterodorsal and ventral bristles; hind tibia with two or three long and a number of short bristles on anterodorsal surface. First vein bare, third with setulae at base above and below; first posterior cell open, ending well before tip of wing, outer cross-vein not half as far from bend of fourth vein as from inner cross-vein, a quite conspicuous costal bristle at apex of auxiliary vein.

Length, 9-11 mm.

Type, male, allotype, and eight female paratypes, Eradu, W.A., 8.9.1926, and one female paratype, Wyalkatchem, W.A., 1.9.1926 (E. W. Ferguson).

EXECHOPALPUS DUBITALIS, n. sp.

This species differs from the preceding one in being smaller, and in having darker legs, and the first posterior cell of wing closed. It is possible that there are sometimes discal bristles on the third visible abdominal tergite, but it is hardly likely that such are ever present on the second. Structurally the male differs from that of the preceding species in having the frons less protuberant, and the third antennal segment narrower. Besides the closed first posterior cell of the wing, the bend of the fourth vein is more rounded than in the preceding species and may be used as a distinguishing character.

Length, 6.5 mm.

Type and one male paratype, Tammin, W.A., 31.8.1926 (E. W. Ferguson).

This species in some particulars agrees very well with Macquart's description of the genotype, but it does not do so closely enough to justify me in deciding that it is that species. The tibiae are but slightly paler at bases than at apices and not markedly yellowish as would be expected from the description of *rufipalpis*.

EXECHOPALPUS NIGRIPES, n. sp.

♀. Agrees very well with the colour description of *rufifemur* in so far as the head, thorax, and abdomen are concerned, except that the latter has no dark apices to the tergites and is checkered on dorsum. The legs are black, with very slight indications of red colour at extreme apices, most noticeable below.

Structurally the species differs from *dubitalis* in having the first posterior cell of the wing narrowly open, and in having the frons less protuberant. The fourth visible abdominal tergite has the discal transverse series of bristles quite strong and conspicuous.

Length, 7 mm.

Type, Sydney, N.S.W., 25.10.1925 (Health Dept.). One specimen.

This can hardly be *rufipalpis*, as in the females of this and related genera the legs are always paler than in the males.

EXECHOPALPUS FULVIPES, n. sp.

♀. Similar in coloration to *dubitalis*, but the humeri and apex of scutellum are slightly yellowish, the fore femora are narrowly striped with fuscous along the posterior side, and the tarsi are black. Sides of abdomen yellowish at base.

The palpi are not as long as in the other species, being shorter than the length of the head, and are less pronouncedly club-shaped, with much shorter bristles than usual, appearing almost bare except under a high power lens. The head is much as in the other species, with the parafacials above wider than the third antennal segment. The thorax is similar to that of *rufifemur*, except that there is a pair of apical bristles on scutellum, which are rather short and curve upward. Apical bristles on abdominal tergites strong, present on all tergites, discals lacking even on the fourth visible tergite. First posterior cell of wing open, bend of fourth vein angulate. Fore tarsus slender, mid tibia with two or three anteroventral bristles, the lower one longest, and a strong submedian ventral bristle.

Length, 8 mm.

Type, Eradu, W.A., 8.9.1926 (E. W. Ferguson). One specimen.

This species is slightly aberrant in having the palpi shorter and less strongly club-shaped and bristled than in the other species, but the frontal bristling is the

same as in the others, and in most characters it agrees so closely with them that I can see no reason for removing it from the genus.

There are several other Australian genera of this tribe.

Tribe PALPOSTOMINI.

I have already presented a key for the identification of the three genera of this tribe known to me, in Part xii of this series of papers, but in some manner I erred in omitting *Eustacomylia* Malloch from the segregate in my recent key to the Australian Tachinidae in which the propleura is haired, and included it in the one with the propleura bare. I present below some data on the tribe and rectify this error.

Genus EUSTACOMYIA Malloch.

This genus has the propleura haired centrally and falls in the group contained between Captions 2 and 13 in my recent generic key. It is at once distinguished from all the genera in the segregate by the unlobed lower calypter, which is not produced on its inner side, but equally wide from base to beyond middle, lies well separate from the scutellum, and is evenly rounded at apex.

If one attempts to place it in the published key, provided the propleural hairs are not overlooked, it will not run out to any genus because of the lack of a facial keel. There are several genera dealt with in the present paper that fail to find a place in the key because of this same feature, and I present herein an addendum to the key to include these.

I have now in hand two species of the genus and present below a comparative synopsis to enable students to identify them.

- A. Arista hardly longer than the third antennal segment; abdomen brownish testaceous, with a blackish dorsocentral vitta, and dark dots at bases of most of the hairs and bristles, especially noticeable apically, the bases of the tergites grey dusted; outer cross-vein of the wing almost exactly mid-way between the inner cross-vein and bend of fourth vein; mid tibia with a ventral bristle beyond middle *breviseta* Malloch.
- AA. Arista longer than the entire antenna; abdomen dull black, mottled with grey dusting, which is seen only from certain angles, most evident on bases of tergites, and on a pair of small discal spots on second tergite; outer cross-vein of wing at about three-fifths of the distance from inner cross-vein to bend of fourth vein; mid tibia without a ventral bristle beyond middle .. *hirta*, n. sp.

EUSTACOMYIA BREVISETA Malloch.

I have still the type specimen of this species in my hands which enables me to give the above comparative data and other facts contained in the description of the new species. The locality of the type is Sydney, N.S.W.

EUSTACOMYIA HIRTA, n. sp.

♂. A larger, more robust, and much darker species than the genotype, with the surface hairs much longer. Head testaceous yellow, occiput fuscous, with grey dust, parafacials yellow dusted; interfrontalia dark brown; antennae and palpi testaceous yellow, third segment of former browned apically; aristae fuscous; all cephalic hairs dark. Thorax black, slightly shining, mesonotum with whitish-grey dust, which leaves five black vittae, the central one lacking in front of suture, the submedian pair not continued much behind suture; pleura grey dusted.

Abdomen dull black, with whitish dust, which appears speckled and is changeably visible as the surface is viewed from different angles. Legs pitchy, coxae and femora yellowish, the anterior surface of the fore pair noticeably pale, tibiae yellowish. Wings greyish hyaline. Calyptrae fuscous. Halteres brown.

Eyes bare; frons in front of ocelli not as wide as third antennal segment, verticals undifferentiated, ocellars the same, each orbit with some fine bristles along the inner margin on anterior two-thirds or more, haired laterally, the hairs continued on parafacials to lower level of eye, parafacials wider than third antennal segment, and about half as wide as height of cheek; arista microscopically pubescent; palpi quite long, slightly thickened. Thoracic dorsum with long, strong, erect hairs, the postsutural dorsocentrals four pairs; one long pair of acrostichals in front of suture; the discal hairs on scutellum much longer and finer than in *breviseta*; sternopleurals two plus one; postscutellum with the chitin more obviously rounded over above than in *breviseta*. Abdomen narrowly ovate, with quite long erect hairs, and long apical bristles on tergites 2 to 4. Legs normal, no anterodorsal bristles on fore tibia. Wing with setulae at base of third vein above and below.

Length, 9 mm.

Type, "Allowrie", Killara, N.S.W., 9.10.1921, no collector's name given. One specimen.

Genus APALPOSTOMA, n. gen.

This genus will take the place of *Eustacomylia* Malloch in my generic key as it will run down to Caption 19, second section, therein. It has the first posterior cell of the wing open, and the bend of fourth vein with a short spur vein which is never present, as far as I have seen, in *Palpostoma* Robineau-Desvoidy. There is one species of *Palpostoma* which has the first posterior cell of the wing very narrowly open or just closed at apex, *apicalis* Malloch, but in it the bend of the fourth vein is evenly rounded, and the frons is much narrower than in the present genus, while the third antennal segment is also longer. It might be well to change the two sections of Caption 19 in the key referred to as below.

19. First posterior cell of wing usually closed and with a more or less distinct petiole, the bend of fourth vein never with a spur vein; third antennal segment at least as long as height of cheek at highest point *Palpostoma* Robineau-Desvoidy.

First posterior cell of wing open; bend of fourth vein angular, and with a short spur vein; third antennal segment much shorter than height of the cheek at its highest point *Apalpostoma*, n. gen.

Genotype, the following species.

APALPOSTOMA CINEREA, n. sp.

♀. Head yellowish-white, interfrontalia yellow, ocellar spot and aristae black, third antennal segment brown except at base, basal two segments and palpi yellow, frontal orbits slightly darkened, grey dusted, parafacials white dusted, some of the lower occipital hairs white, other cephalic hairs dark. Thorax black, densely pale-grey dusted, entirely dull, with four linear dark vittae which do not extend to posterior margin of mesonotum; scutellum yellowish at apex. Abdomen coloured as thorax, with traces of a dark brown dorsocentral vitta, and similarly coloured apices to tergites, broadest on third, and broken on fourth. Legs testaceous yellow, fore femora on posterior sides and hind femora apically stained with grey or fuscous. Wings greyish hyaline. Calyptrae white. Halteres dull yellow.

Frons at vertex about one-third of the head width, much widened to anterior margin, each orbit at anterior extremity as wide as the parallel-sided interfrontalia, with a series of inner marginal bristles, three or four proclinate outer bristles on upper half, and many lateral hairs; verticals and ocellars short, about as long as the orbitals; parafacial about as wide as third antennal segment above; profile of head as Figure 29; proboscis without palpiform apical processes. Thorax with the dorsal bristles short; postsutural dorsocentrals four pairs, the hind pair long, presuturals two pairs, acrostichals in front of suture hardly differentiated from the rather strong hairs; sternopleurals 2, hardly longer than the long discal hairs; scutellum with the usual four marginal bristles; postscutellum with the chitin carried a short distance over on dorsum. Abdomen ovate, second and third

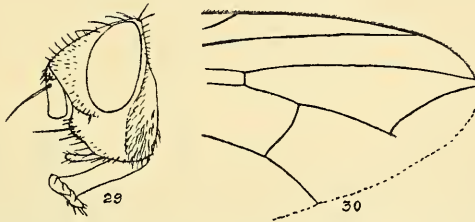


Fig. 29.—*Apalpostoma cinerea*. Head of female from the side.

Fig. 30.—*Apalpostoma cinerea*. Apex of wing.

visible tergites with the apical bristles short and weak. Legs normal; fore tibia without anterodorsal setulae; mid tibia with a distinct submedian ventral bristle; hind tibia with about three uneven anterodorsal and posterodorsal bristles. Outer portion of wing venation as Figure 30. Lower calypter normal for the tribe.

Length, 4 mm.

Type, Wyalkatchem, W.A., 1.9.1926 (E. W. Ferguson). One specimen.

The male is unknown to me.

Genus PALPOSTOMA Robineau-Desvoidy.

I have received some additional material in this genus lately, but am not as yet prepared to submit a revision for publication. As I have already pointed out in one of my published papers, the genus is a very difficult one and really would entail some careful field work and the possession of much material by some student to enable its thorough elucidation.

[To be continued.]